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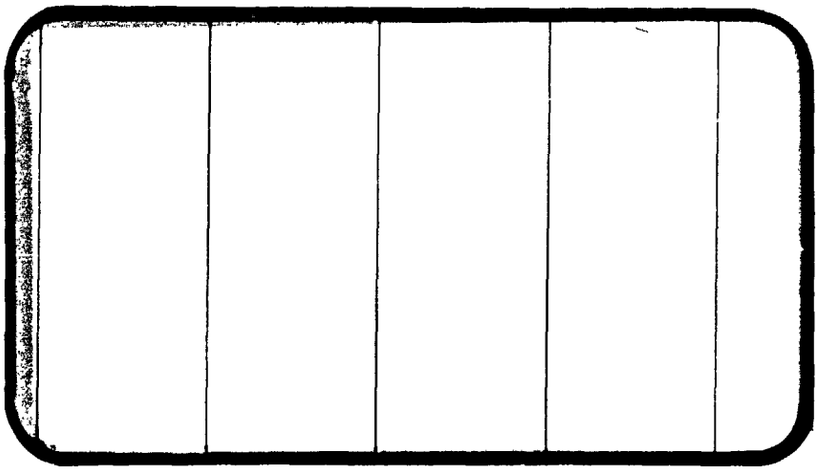

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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANagement services

SPACE DIVISION CHRYSLER CORPORATION

October, 1974

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EFFECTS OF AIR BREATHING ENGINE PLUMES ON SSV ORBITER SUBSONIC WING PRESSURE DISTRIBUTION (OA57B)

VOLUME 1 OF 2

By

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Rockwell International

Prepared under NASA Contract Number NAS9-13247

By

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New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

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Model Number:	2-0
NASA Series No.:	0A57B
Test Data:	18 through 23 September 1973

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EFFECTS OF AIR BREATHING ENGINE PLUMES ON SSV ORBITER SUBSONIC WING PRESSURE DISTRIBUTION (OA57B)

By T. Soard*

ABSTRACT

The data presented in this report were obtained during wind tunnel tests of a 0.0405-scale model of the -89B Ferry Configuration of the Space Shuttle Vehicle Orbiter. These tests were conducted in the Rockwell International Low Speed Wind Tunnel (NAAL) during the time period of September 18 to September 23, 1973. NASA Space Shuttle test designation was OA57B.

The primary test objective was to investigate orbiter wing pressure distributions resulting from nacelle plumes above and below the wing. Three six-engine nacelle configurations were tested. One configuration had a twin-podded nacelle mounted above each wing and the others had one mounted below each wing. Both had a centerline twin-podded nacelle mounted below the wing. Wing pressure distribution was determined by locating static pressure bugs on the upper and lower surfaces of the left wing. Pressure bugs were also located on the upper and lower surfaces of the body flap and on the B_{12} afterbody fairing when it was installed. Base and balance cavity pressures were recorded and a strain gage instrumented beam in the right wing measured elevon hinge moments and normal forces.

Testing was conducted at 3 ground plane heights (h/b = 0.039, 0.125,

* Rockwell International

and 0.286), with 4 engine pressure ratios (P_{TN}/P_{so} = 0, 1.0, 1.3, and 1.5), with elevon deflections of 0° and -15°, and with body flap deflections of -18°, 0°, and +20°. The nominal angle of attack range was -4° to +20° with an angle of sideslip of 0°. A Mach number of 0.200 was maintained throughout the test.

The model was mounted on a 2.5-inch diameter dummy balance using the W-1052-5 sting and W-1092-A-2 adapter, locating the center of rotation at the trailing edge of the root chord.

This report is presented in two volumes. Volume 1 contains the data figures and Volume 2 contains the tabulated source data.

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SCHEDULE OF COEFFICIENTS PLOTTED:

(A) CMWING, CNWING versus ELEVON

(B) CHME, CNE versus ALPHA

(C) CPBF versus ALPHA

(D) CNWING, CMWING, CNFLAP, CMFLAP, CNTOTL, CMTOTL versus ALPHA

(E) CAB, CPBAVE versus ALPHA

(F) CMABDY, CNABDY, CMTOTL, CNTOTL versus ALPHA

(G) CP versus 2Y/B

(H) CP versus X/C

(I) DELCP versus X/C

(J) CP versus X/L

NOMENCLATURE

Symbol	SADSAC Symbol	Definition
A		area of influence, ft^2
b	BREF	reference span, inches
C_A	CA	axial-force coefficient, axial force/qS
C_{HM}	CHME	hinge-moment coefficient, hinge moment/$qS_E\bar{c}_E$
C_N	CN	normal-force coefficient, normal force/qS
C_m	CLM	pitching-moment coefficient, pitching moment/$qS\bar{c}$
C_p	CP	pressure coefficient, $P_{s\ell} - P_{so}/q$
C.P.		center of pressure
GN_2		nitrogen gas
XCP		distance from MRP to C.P. on X axis, inches
$\bar{c}$	LREF	reference length, inches
h_{WTE}/b	H/B	ratio of height of wing trailing edge above ground plane to reference span
ℓ		distance from MCR to static pressure tap
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis
P		pressure, psf
q	Q(PSF)	dynamic pressure, psf
S	SREF	reference area, ft^2
T		temperature, ^oR

NOMENCLATURE (Continued)

α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
γ		ratio of specific heats, $\gamma = 1.4$ for air
Λ_{LE}		leading edge sweep angle, degrees
	CMWING	wing pitching moment coefficient
	CNWING	wing normal force coefficient
δ_e	ELEVON	elevon, surface deflection angle positive deflection, trailing edge down; degrees
ΔC_p	DELCP	incremental pressure coefficient
CA_b	CAB or CAB1	base force coefficient, $\frac{\text{base force}}{qS} - A_b\ (p_b-p_o)/qS$
C_{N_E}	CNE	elevon normal force coefficient
	CPBF	body flap pressure coefficient
	CPBAVE	average base pressure coefficient
	CNTOTL	total normal force coefficient
	CMTOTL	total pitching moment coefficient
C_p	CP	pressure coefficient $(p_1-p_o)/q$
x/c	X/C	local chordwise position/wing chord length
Y/b/2	2Y/B or η	local spanwise position/wing semi-span
	X/L	local chordwise position/reference length
	CNFLAP	body flap normal coefficient
	CMFLAP	body flap pitching moment coefficient
	CNABDY	afterbody normal force coefficient
	CMABDY	afterbody pitching moment coefficient

NOMENCLATURE (Concluded)

P_{TN}/P_o	PTN/P	total nozzle pressure/free stream pressure
R_e	RN/L	Reynold's number, RN/L, millions per foot
δ_{BF}	BDFLAP	flap, surface deflection angle, positive
ℓ_B		body length, inches
	CPSB	base pressure coefficient
	CPSAB	side afterbody pressure coefficient
	CPBAB	bottom afterbody pressure coefficient

SUBSCRIPTS

B	base
BC	balance cavity
E	elevon
HM	hinge moment
i	index, value at station i
L	lower surface
ℓ	local
N	nozzle
o	freestream
p	pressure
s	static
T	total
U	upper

CONFIGURATIONS INVESTIGATED

The model tested was a 0.0405-scale representation of the Rockwell International-89B Space Shuttle Orbiter. The basic model was of the blended wing-body design utilizing a double delta wing ($75°/45°\Lambda_{LE}$), full span elevons (unswept hingeline), and a canopy. To complete the ferry configuration, air breathing engine nacelles were tested in locations above and below the wing as per SS-A00028. Jet plumes were simulated by exhausting compressed GN_2 from all nacelles.

All model components were per VL70-00089B configuration except for the fuselage lines from station 1307 aft and the engine nacelle groupings and locations.

The orbiter model was constructed of wood and aluminum and was mounted on the Task Corporation 2.5-inch Mk IX dummy balance. The following nomenclature was used to designate the various model components:

Component	Description
B_{16}	-89B fuselage
B_{12}	-89B fuselage with base fairing
C_4	-89B canopy
F_1	Body flap, ATP baseline
J_{40}	Air breathing propulsion system consisting of a twin podded nacelle below each wing and a twin podded nacelle on the lower fuselage centerline
J_{41}	Same as J_{40} except engines under wings extended aft an additional 90 inches full scale

J_{42}	Air breathing propulsion system consisting of a twin podded nacelle above each wing and a twin podded nacelle on the lower fuselage centerline
W_{87}	-89B double delta wing ($75°/45°\Lambda_{LE}$)
E_{18}	Elevon, full span split, used with wing W_{87}

TEST FACILITY

The North American Aerodynamics Laboratory (NAAL) 7.75 x 11.0-Foot Wind Tunnel is a continuous flow, closed circuit, single return type tunnel capable of speeds up to 200 miles per hour. The test section is vented to atmospheric pressure and is 7.75 x 11 feet wide by 12 feet in length. Power is supplied by a 1250 horsepower nacelle mounted synchronous motor driving a 19 foot, seven blade, laminated birch propeller. The airspeed is controlled by varying the degree of coupling between the motor and propeller by means of a magnetic clutch. A damping screen and honeycomb section in the settling chamber upstream from the contraction cone (ratio 7.53 to 1) minimizes turbulence in the test section. The NAAL Wind Tunnel has been in operation since June 1943 and calibrations are available over a wide range of test conditions.

Tests may be conducted using a variety of mounting systems, e.g., a single strut, double strut, sting strut, reflection plane, cable suspension, and two dimensional wall. Aerodynamic data may be measured by a planar type external balance. An automatic data Acquisition System is used to collect, multiplex, digitize, and record 50 channels of force and/or pressure data on magnetic tape. This data is then rapidly reduced and plotted using automatic data processing equipment and an automatic digital plotter.

DATA REDUCTION

Since only pressure distribution and elevon hinge data were required during the test period, the model was mounted on the Task Mk IX 2.5" dummy balance. Therefore no corrections were made for balance and sting deflection. But standard facility corrections for blockage were applied as required. A base and balance cavity axial force coefficient was calculated as presented below:

$$C_{A_{BC}} = -\left(\frac{P_{BC} - P_{SO}}{q}\right)\left(\frac{A_{BC}}{S}\right)$$

and:

$$C_{A_{B1}} = -\left(\frac{P_B - P_{SO}}{q}\right)\left(\frac{A_B}{S}\right),\ P_B = 1/5\ (P_{B1} + .. + P_{B5})$$

Elevon hinge moments and normal force coefficients were calculated in the following manner:

$$C_{HM} = \frac{HM_E}{qS_E\bar{c}_E}$$

where: HM_E = (gage output)x(calib. factor), in-lbs

S_E = Elevon area, ft^2

$\bar{c}_E$ = M.A.C. of elevon, in

and:

$$C_{N_E} = \frac{HM_E}{qS(\bar{c}_E/2)}$$

S = Reference area, ft^2

Static pressure coefficients were calculated as shown below:

$$C_{p_i} = \left(\frac{P_{s_i} - P_{s_o}}{q}\right)$$

Wing $i_{MAX} = 30$

Body flap $i_{MAX} = 3$

Afterbody $i_{MAX} = 3$

where:

P_{s_i} = local static pressure, psf

P_{s_o} = Tunnel static pressure, psf

q = Tunnel dynamic pressure, psf

Wing panel, body flap, afterbody, and total normal force and pitching moment (about 66% body length) coefficients were calculated as presented below:

$$C_N = \sum_{1}^{i_{MAX}} \left(C_{p_{i_l}} - C_{p_{i_u}}\right) \frac{A_{p_i}}{S}$$

where: $C_{p_{i_u}}$ = Upper surface pressure coefficient (assume afterbody $C_{p_{i_u}} = 0.0$)

$C_{p_{i_L}}$ = Lower surface pressure coefficient

A_{p_i} = Area of influence, ft^2, (see tables IV and V for values)

S = Reference area, ft^2

and:

$$C_{m_{0.66\ell_B}} = \sum_{1}^{i_{MAX}} C_{N_i} \frac{\ell_i}{\bar{c}}$$

Where:

l_i = Distance of tap from moment reference point, in, see tables IV and V

$\bar{c}$ = Reference length, in

and:

$$X_{CP} = \frac{C_m}{C_N} (\bar{c})$$

and:

$$C_N \text{ Total} = C_{N_{Wing}} + C_{N_{Body\ flap}} + C_{N_{Afterbody}}$$

and:

$$C_m \text{ Total} = C_{m_{Wing}} + C_{m_{Body\ flap}} + C_{m_{Afterbody}}$$

and:

$$C_m/C_N \text{ Total} = C_m/C_{N_{Wing}} + C_m/C_{N_{Body\ flap}} + C_m/C_{N_{Afterbody}}$$

The following reference dimensions and constants were used in data reduction.

Basic constants:

Symbol	Definition	Model Scale
S	Reference area, ft^2	4.412
b	Reference span, in	37.935
$\bar{c}$	Reference length, in	19.230
S_E	Elevon reference area, ft^2	0.336
$\bar{c}_E$	Elevon reference length, in	3.44

DATA REDUCTION (Concluded)

A_N	Nacelle nozzle exit area, ft^2	0.01278
XMRP	Moment reference point on X axis, in	43.598
XMRP	Moment reference point on Y axis, in	0.0
ZMRP	Moment reference point on Z axis, in	-0.405

TABLE I.

TEST : 0A57B		DATE : 9-24-73	
TEST CONDITIONS			
MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.20	1.43×10^6/Ft.	60 psf	90-120

BALANCE UTILIZED: TASK Corp 2.5 inch Mk IX DUMMY

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF			
SF			
AF			
PM			
RM			
YM			

COMMENTS: Model instrumented with elevon hinge moment gages and wing, body flap and afterbody pressure orifices.

TABLE II.

TEST: 0A57B (NAAL 713) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: SEPT. 18-23, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES M_{∞}	h/b	δ_f	δ_e	NO. OF RUNS	MACH NUMBERS .20	TEST RUN NUMBERS
RDV 001	$B_{16}C_5F_1J_{45}W_{87}E_{18}$	10	0	VAR	.039	-18	0	1	1	
002		10		VAR					2	
003		A		1.0					3	
004				1.3					4	
005				1.5					5	
006		B		1.0	.125				6	
007				1.3					7	
008				1.5					8	
009				1.5		0			9	
010				1.3					10	
011				1.0					11	
012				1.5	.286				12	
013				1.0					13	
014				1.3					14	
015				1.0		-18			15	
016				1.5					16	
017				1.3					17	
018				1.0					18	

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS — C.AR(1) C.AR(2)

α OR β SCHEDULES: α(A) = 10,15,20 ; α(B) = -4,0,5,10,15,20

* DEPENDENT VARIABLES ARE LISTED IN THE TABULATED SOURCE DATA (VOLUME 2).

TABLE II. - Continued.

TEST : 0A57B (NAAL 713) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE : SEPT 18-23, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES h_1/h_2	h/b	δf	δe	NO. OF RUNS	MACH NUMBERS .20	TEST RUN NUMBERS
RDV 019	$B_R C_5 F_1 J_{40} W_{87} E_{18}$	B	0	1.5	.286	+20	0	1	19	
020				1.3					20	
021				1.0					21	
022				1.5	.125				22	
023				1.3					23	
024				1.0					24	
025		A		1.5		0			25	
026				1.3					26	
027				1.0					27	
028		B		1.5	.125	-18	+15		28	
029				1.3					29	
030				1.0					30	
031		A		1.5	.039				31	
032				1.3					32	
033				1.0					33	
034		B		1.5	.286				34	
035				1.3					35	
036				1.0					36	

1 7 13 19 25 31 37 43 49 55 61 67 73 76

α OR β SCHEDULES: α(A) = 10,15,20; α(B) = -4,0,5,10,15,20

* DEPENDENT VARIABLES ARE LISTED IN THE TABULATED SOURCE DATA (VOLUME II).

TABLE II. - Continued.

TEST: ØA 57B (NAVAL 713) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: SEPT 18-23, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES H_N/B	h/b	δf	δe	NO. OF RUNS	MACH NUMBERS
RDV 037	$B_{16}C_5F_1J_{40}W_{87}E_{18}$	B	0	1.5	.286	-18	-15	1	.20
038				1.3					37
039				1.0					38
040		A		1.5	.039				39
041				1.3					40
042				1.0					41
043		B		1.5	.125				42
044				1.3					43
045				1.0					44
046	$B_{16}C_5F_1J_{41}W_{87}E_{18}$			1.3			+15		45
047				1.0					46
048				1.3	.039				47
049				1.0	.039				48
050				1.3	.286				49
051				1.0					50
052				1.3			0		51
053				1.0					52
054				1.3	.039				53
									54

1ST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS

IDENTIFIER (1) IDENTIFIER (2)

α OR β SCHEDULES: $\alpha(A) = 10, 15, 20$; $\alpha(B) = -4, 0, 5, 10, 15, 20$

* DEPENDENT VARIABLES ARE LISTED IN THE TABULATED SOURCE DATA (VOLUME 2).

TABLE II. - Continued.

TEST: ΦA57B (NAAL 713) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: SEPT 18-23, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES $P_{m/p}$	h/b	δf	δe	NO. OF RUNS	MACH NUMBERS .20	TEST RUN NUMBERS
RDV 055	$B_{16}C_5F_1J_{41}W_{87}E_{18}$	B	0	1.3	.039	-18	0		55	
056				1.0	.039				56	
057				1.3	.125				57	
058				1.0					58	
059	$B_{16}C_5F_1J_{42}W_{87}E_{18}$			1.5					59	
060				1.3					60	
061				1.0					61	
062		A		1.5	.039				62	
063				1.3					63	
064				1.0					64	
065		B		1.5	.125				65	
066				1.3					66	
067				1.0					67	
068				1.5	.286				68	
069				1.3					69	
070				1.0					70	
071	$B_{12}C_5J_{42}W_{37}E_{13}$			1.3		—			71	
072				1.0		—			72	

1 7 13 19 25 31 37 43 49 55 61 67 75 76

α OR β SCHEDULES — COEFFICIENTS: $\alpha(A) = 10, 15, 20$; $\alpha(B) = -4, 0, 5, 10, 15, 20$

* DEPENDENT VARIABLES ARE LISTED IN THE TABULATED SOURCE DATA (VOLUME 2).

TABLE II. - Concluded.

TEST: ØA57B (NAAL 713) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: SEPT 18-23, 1973

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES M_∞/P_{t_∞}	h/b	δf	δe	NO. OF RUNS	MACH NUMBERS	TEST RUN NUMBERS
RUN 073	$B_{12}C_5F_1J_{A2}W_{87}E_{18}$	B	0	1.3	.2486	+20	0		.20	73
↓ 074	↓	↓	↓	1.0	↓	↓	↓		74	

1 7 13 19 25 31 37 43 49 55 61 67 75 76

* COEFFICENTS — IC(AR(1)) IC(AR(2)) ...

α OR β SCHEDULES: $\alpha(A)$: 10, 15, 20

$\alpha(B)$: -4, 0, 5, 10, 15, 20

*DEPENDENT VARIABLES ARE LISTED IN THE TABULATED SOURCE DATA (VOLUME 2).

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY -B12 Body

GENERAL DESCRIPTION: Fuselage, 2A configuration with base fairing, lightweight orbiter per Rockwell lines VL70-000103

Scale Model = 0.0405

DRAWING NUMBER: SS-A00102
VL70-000103

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length - in.	1705.0	69.05250
Max. Width - in.		
Max. Depth - in.	248.0	10.0440
Fineness Ratio	6.875	6.875
Area - Ft^2		
Max. Cross-Sectional	355.278	0.58274
Planform		
Wetted		
Base		

TABLE III. - Continued.

MODEL COMPONENT: BODY - B16

GENERAL DESCRIPTION: -89B Fuselage

Scale Model = 0.0405

DRAWING NUMBER: VL72-000089

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length - in.	1328.3	53.796
Max. Width - in.		
Max. Depth - in.	248.0	10.044
Fineness Ratio - in.	5.35605	5.35605
Area - Ft^2		
Max. Cross-Sectional	355.278	0.583
Planform		
Wetted		
Base		

TABLE III. - Continued.

MODEL COMPONENT: CANOPY - C5

GENERAL DESCRIPTION: -89B Canopy

Scale Model = 0.0405

DRAWING NUMBER VL70-000092

DIMENSION:	FULL SCALE	MODEL SCALE
Length (Sta Fwd Bulkhead)	391.0	
Max Width (T.E. Bulkhead)	560.0	
Max Depth (WPZ = 421.922 to Z = 500)		
Fineness Ratio		
Area		
Max Cross-Sectional		
Planform		
Wetted		
Base		
Sta. Fwd. Bulkhead, Fus. Sta	391.00	15.836
Sta. T.E. , Fus. Sta.	560.	22.680

TABLE III. - Continued.

MODEL COMPONENT: Body Flap - F1

GENERAL DESCRIPTION: Body Flap Located on Lower Aft Portion of Fuselage Trailing Edge

Scale Model = .0405

DRAWING NUMBER: VL70-000003A

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length in.	236.54	9.580
Flap L.E. Fus. Sta. in.	1528.30	61.896
Flap T.E. Fus. Sta. in.	1650.56	66.848
Span in.	236.54	9.580
Area ft^2		
Max. Cross-Sectional		
Planform	199.75	0.328
Wetted		
Base		

TABLE III. - Continued.

MODEL COMPONENT: ELEVON E-18

GENERAL DESCRIPTION: Unswept hingeline elevon used on Wing W87

Scale Model = 0.0405

DRAWING NUMBER: VL70-000093

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area - FT^2	205.52	0.337
Span (equivalent) - IN.	353.34	14.310
Inb'd equivalent chord	114.78	4.649
Outb'd equivalent chord	55.00	2.228
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	.208	.208
At Outb'd equiv. chord	.400	.400
Sweep Back Angles, degrees		
Leading Edge	0.00	0.00
Tailing Edge	-10.24	-10.24
Hingeline	0.00	0.00
Area Moment (Normal to hinge line) - FT^3 Product of Area Moment	1548.07	2.539

TABLE III. - Continued.

MODEL COMPONENT: AIR BREATHING PROPULSION SYSTEM - J_{40}

GENERAL DESCRIPTION: One Twin-podded nacelle under each wing plus one bottom centerline twin-podded nacelle.

Scale: 0.0405

DRAWING NUMBER: SS-A00028

DIMENSIONS:	FULL SCALE	MODEL SCALE
Length - In.	231.580	9.379
Max. Width - In.	52.000	2.106
Max. Depth - In.	52.000	2.106
Fineness Ratio		
Area		
Max Cross-Sectional - $IN.^2$	2123.717	3.483
Nozzle - $In.^2$	1122.327	1.841
Wetted		
Base		
Forebody Nose	Wing	℄
Model Station - In.	38.88	38.88
Water Line - In.	10.328	9.577
Thrust Line	OUTB'D INB'D	℄
Butt Line-In	11.117 8.567	0.0
Incidence - Deg.	+4°	+ 4°

TABLE III. - Continued.

MODEL COMPONENT: AIR BREATHING PROPULSION SYSTEM - J_{41}

GENERAL DESCRIPTION: One twin-podded nacelle above each wing plus one bottom centerline twin podded nacelle. Engines 1, 2, 5, and 6 have been extended 90 inches full-scale.

SCALE: 0.0405

DRAWING NUMBER: SS-A00028

DIMENSIONS:	FULL SCALE		MODEL SCALE
Length - In.	321.58		
Max. Width	52.000		2.106
Max. Depth	52.000		2.106
Fineness Ratio			
Area			
Max. Cross-Sectional - $In.^2$	2123.717		3.843
Nozzle - $In.^2$	1122.327		1.841
Wetted			
Base			
Forebody Nose	Wing		C
Model Station - In.	38.88		38.88
Water Line - In.	15.15		9.577
Thrust Line	Outb'd	Inb'd	℄
Butt Line - In.	11.117	8.567	0.0
Incidence - Deg.	0°		+ 4°

TABLE III. - Continued.

MODEL COMPONENT: AIR BREATHING PROPULSION SYSTEM - J_{42}

GENERAL DESCRIPTION: One twin-podded nacelle above each wing plus one bottom centerline twin-podded nacelle.

SCALE: 0.0405

DRAWING NUMBER: SS-A00028

DIMENSIONS:			FULL SCALE	MODEL SCALE
Length			231.580	9.379
Max. Width			52.000	2.106
Max. Depth			52.000	2.106
Fineness Ratio				
Area				
Max. Cross-Sectional	In.^{2}		2123.717	3.843
Nozzle - In.^{2}			1122.327	1.841
Wetted				
Base				
Forebody Nose			WING	℄
Model Station - In.			38.88	38.88
Water Line - In.			15.15	9.577
Thrust Line		Outb'd	Inb'd	℄
Butt Line - In.		11.117	8.567	0.0
Incidence - Deg.		0°		.4°

TABLE III. - Concluded.

MODEL COMPONENT: WING, W_{87}

GENERAL DESCRIPTION: Double delta wing (75° /45° ΛLE)

SCALE MODEL: 0.0405

DRAWING NUMBER: VL70-000093

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area - ft^2		
Planform	2689.38	4.411
Wetted		
Span - equivalent	77.17	3.125
Aspect Ratio	2.214	2.214
Rate of Taper	1.176	1.176
Taper Ratio	0.209	0.209
Dihedral Angle, deg. @ X/C=75.33%	3.861	3.861
Incidence Angle, degrees	3.000	3.000
Aerodynamic Twist, degrees	--	--
Toe-In Angle	--	--
Cant Angle	--	--
Sweep-Back Angles, degrees		
Leading Edge	44.873	44.873
Trailing Edge	- 10.242	-10.242
0.25 Element Line	35.050	35.050
Chords:		
Root (Wing Sta. 0.0)	690.19	27.953
Tip (equivalent)	144.30	5.844
MAC	476.76	19.309
Fus. Sta. of .25 MAC	1136.12	46.013
W.P. of .25 MAC	289.44	11.722
B.L. of .25 MAC	181.03	7.330
Airfoil Section		
Root	--	--
Tip	--	--
EXPOSED DATA		
Area - ft^2	1746.89	2.865
Span (equivalent) - ft.	59.16	2.396
Aspect Ratio	2.004	2.004
Taper Ratio	0.256	0.256
Chords - in.		
Root	562.77	22.792
Tip	144.30	5.844
MAC	394.81	15.990
Fus. Sta. of .25 MAC	1185.17	47.000
W.P. of .25 MAC	291.56	11.808
B.L. of .25 MAC	250.54	10.147
Leading Edge Cuff		
Planform Area - ft^2	121.42	0.139
L.E. Intersects Fus. @ Sta.	560.00	22.860
L.E. Intersects Wing @ Sta.	1035.00	41.918

TABLE IV. - WING PRESSURE CONSTANTS AND LOCATIONS

C_{p_i}	x/c	η	A_{p_i}/S	$\ell_i/\bar{c}$
i=1	15	0	.0732	.282
7	15	33.4	.0592	.019
13	15	52.0	.0355	-.131
19	15	66.3	.0355	-.246
25	15	87.6	.0236	-.418
2	30	0	.0489	-.065
8	30	33.4	.0395	-.122
14	30	52.0	.0236	-.247
20	30	66.3	.0223	-.332
26	30	87.6	.0157	-.460
3	45	0	.0489	-.152
9	45	33.4	.0395	-.263
15	45	52.0	.0236	-.363
21	45	66.3	.0223	-.419
27	45	87.6	.0157	-.502
4	60	0	.0489	-.369
10	60	33.4	.0395	-.404
16	60	52.0	.0236	-.479
22	60	66.3	.0223	-.505
28	60	87.6	.0157	-.544
5	75	0	.0489	-.586
11	75	33.4	.0395	-.545
17	75	52.0	.0236	-.595
23	75	66.3	.0223	-.592
29	75	87.6	.0157	-.586
6	90	0	.0489	-.803
12	90	33.4	.0395	-.686
18	90	52.0	.0236	-.711
24	90	66.3	.0223	-.679
30	90	87.6	.0157	-.628

Note: Values identical for upper and lower surface

TABLE V. - BODY FLAP AND AFTERBODY PRESSURE CONSTANTS

Body Flap Pressure Constants and Locations

Location	A_{p_i}/S	$\ell_i/\bar{c}$
1	.0170	-1.0399
2	.0160	-1.0399
3	.0170	-1.0399

Note: Values identical for upper and lower surface

Afterbody Pressure Constants and Locations*

Location	A_{p_i}/S	$\ell_i/\bar{c}$
1	.0479	-1.030
2	.0479	-1.191
3	.0479	-1.373

Note: 1. Values identical for side and lower surfaces

2. Assume that all C_p upper = 0.0 for afterbody only

3. Side not utilized for integration

* Afterbody installed during runs 71 and 72 only

Notes:

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrows
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

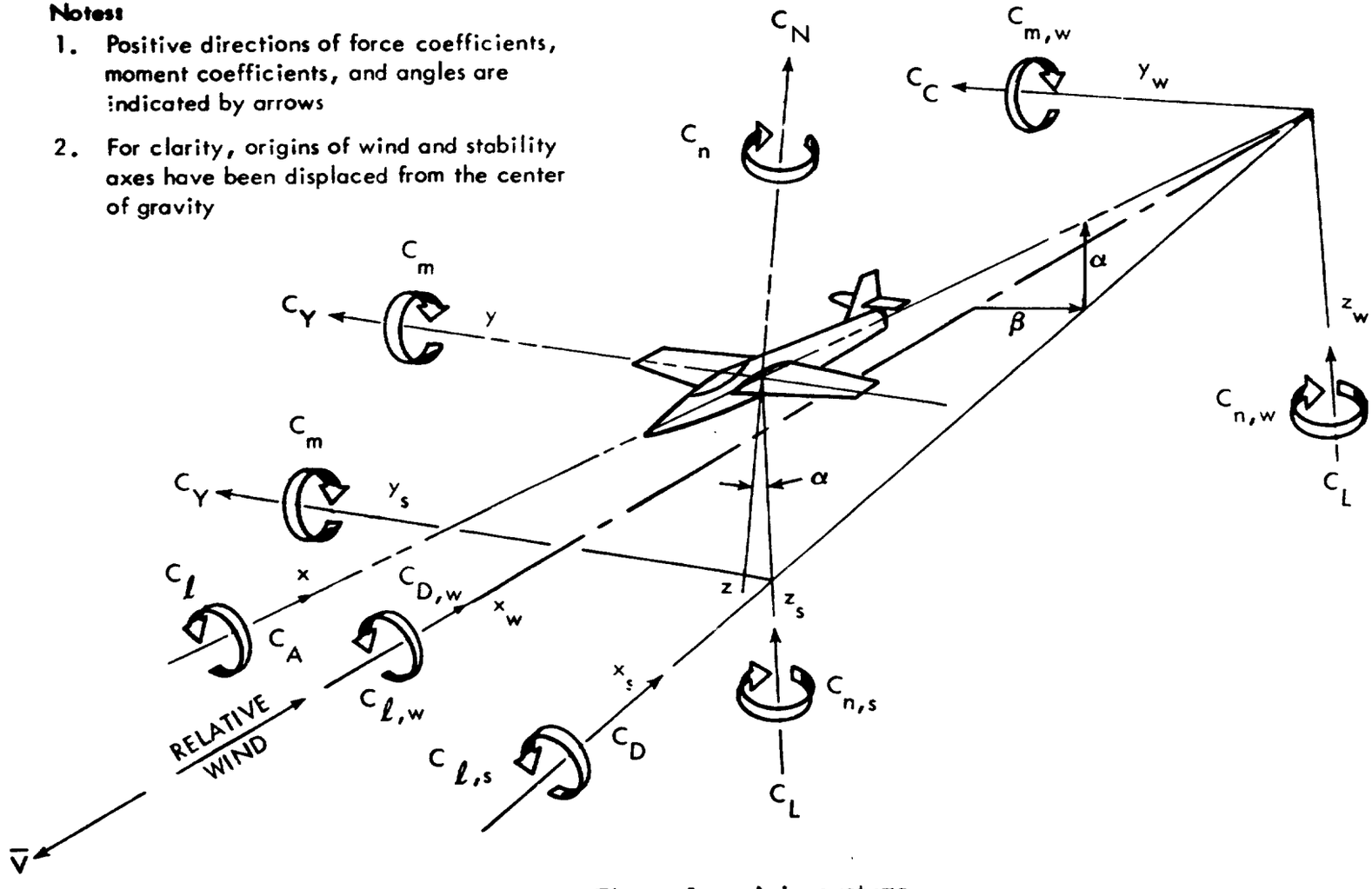
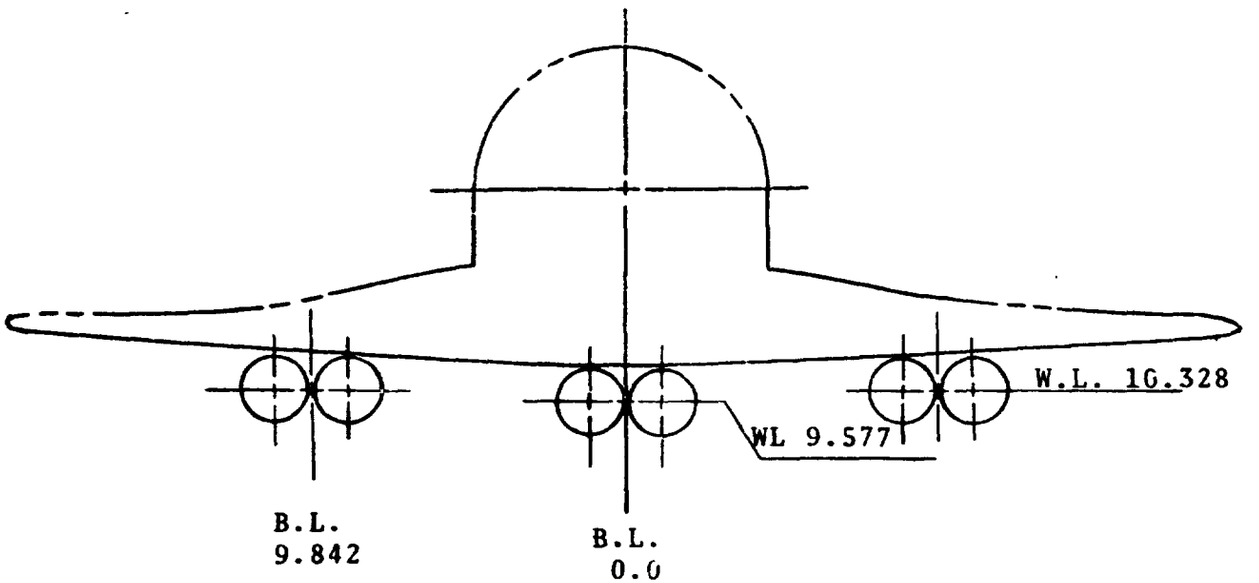


Figure 1. - Axis systems.

J40

J41 - As Shown With 90-Inch (Full Scale) Insert In Engines 1, 2, 5, and 6.

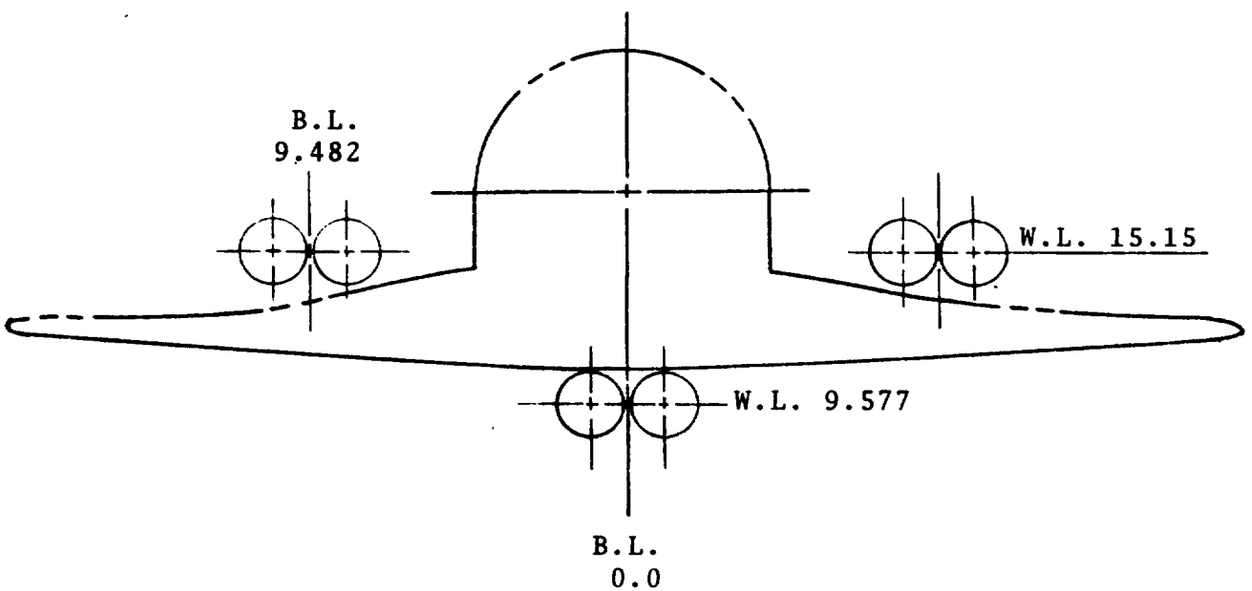


Nose at M.S. 38.88 (6 PLCS)

a. J_{40} and J_{41} nacelle configuration

Figure 2. - Model sketches.

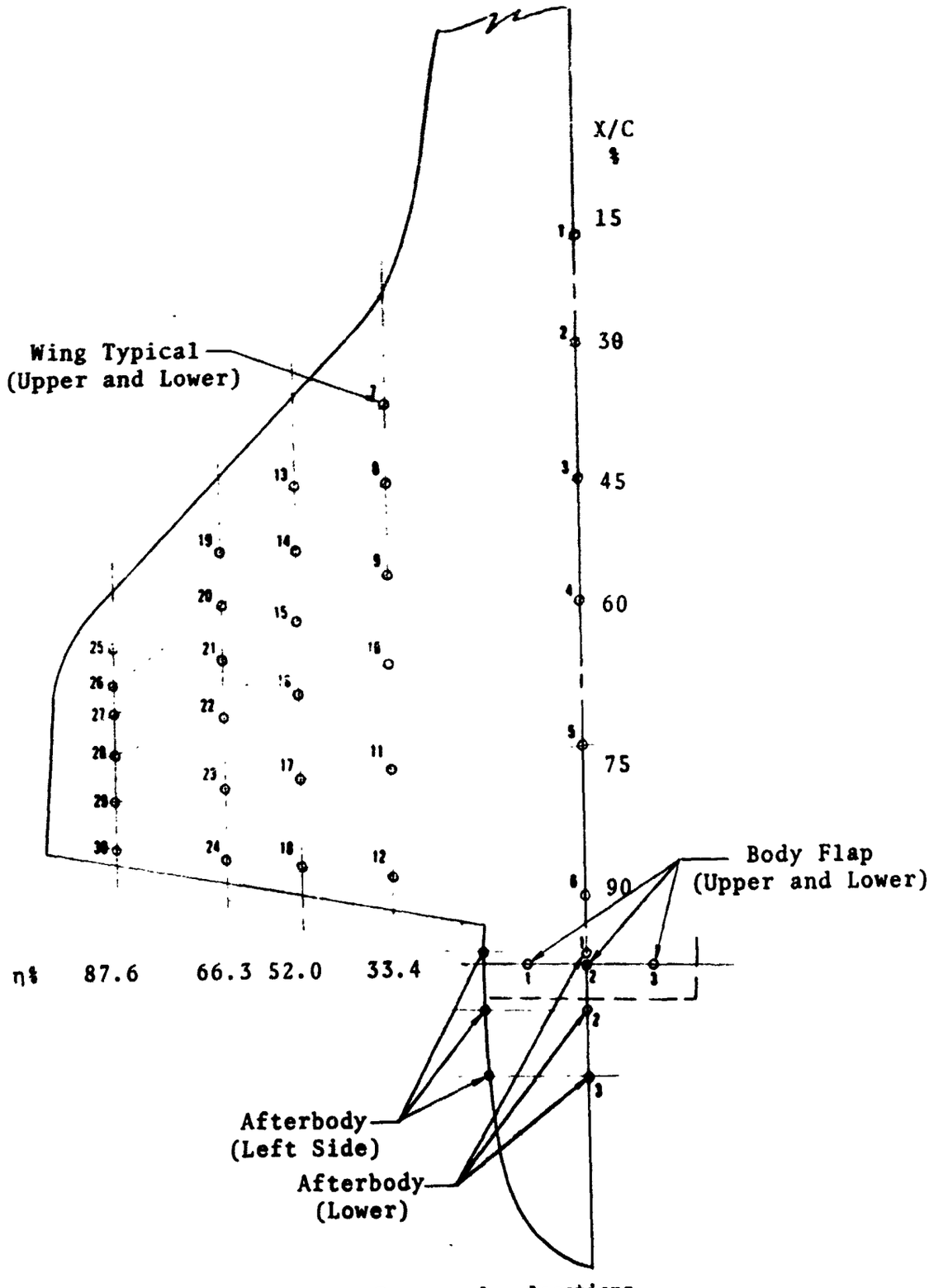
J42



Nose at M.S. 38.88 (6 PLCS)

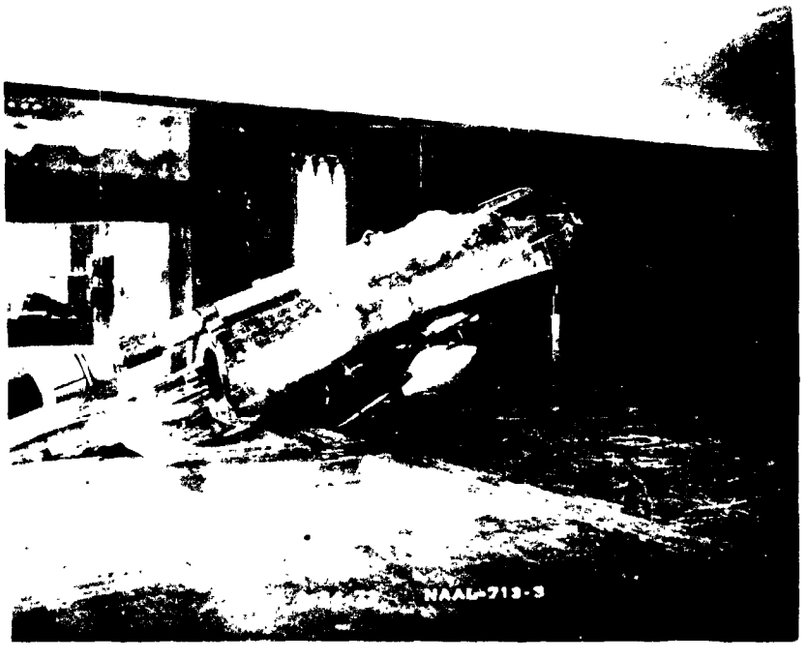
b. J_{42} nacelle configuration.

Figure 2. - Continued.



c. Pressure bug locations.

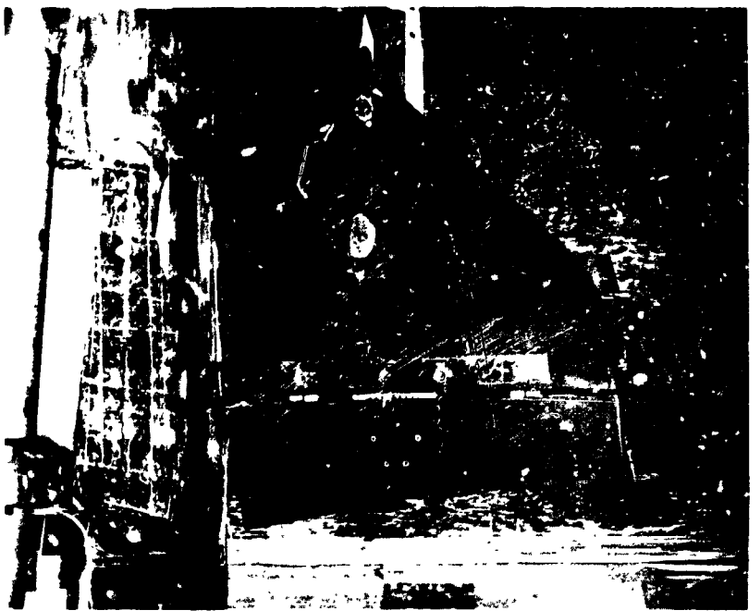
Figure 2. - Concluded.



a. Model Installation.

b. Pressure bug installation, upper surface of left wing.

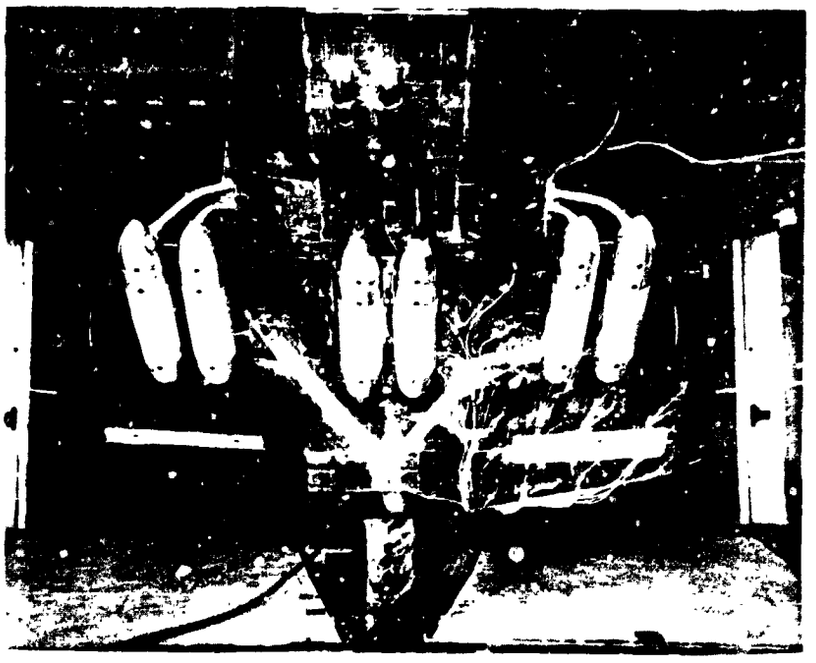
Figure 3. - Model Photographs.



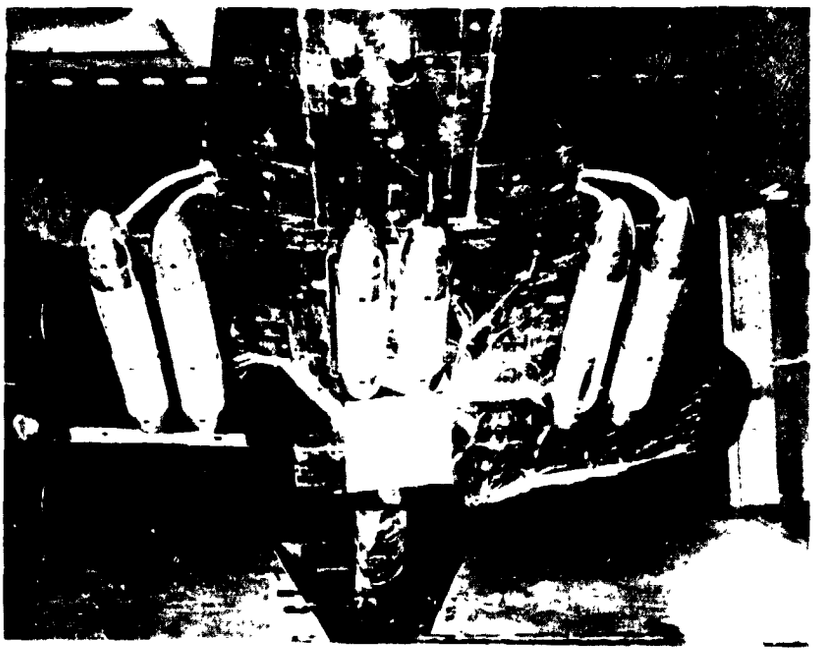
c. Right elevon showing strain gage instrumented beam.

d. Pressure bug location, upper surface of body flap.

Figure 3. - Continued.

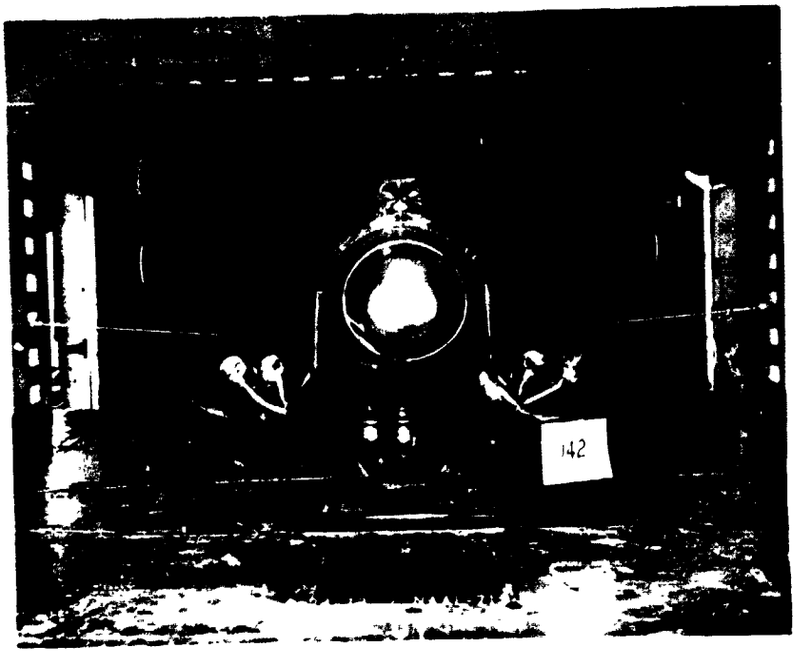


e J_{40} configuration of ABPS.



f. J_{41} configuration of ABPS.

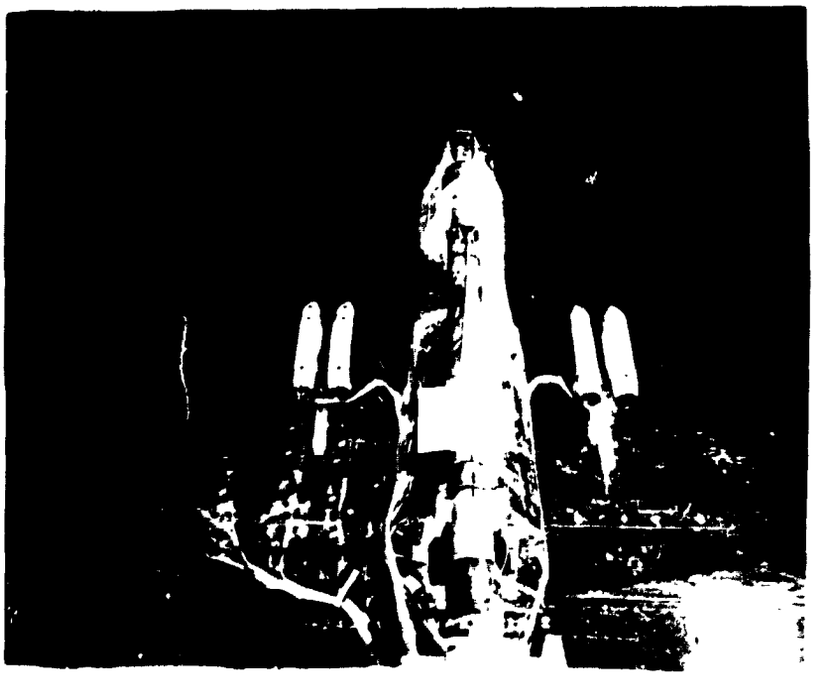
Figure 3. - Continued.



g. J_{42} configuration of ABPS.

h. J_{42} left wing.

Figure 3. - Continued.



i. J_{42} top view.

Figure 3. - Concluded.

DATA FIGURES

SYMBOL	ALPHA	PARAMETRIC VALUES			DATA SOURCE				REFERENCE INFORMATION		
O	10.000	MACH	.200	BETA	.000	DATASET	ELEVON	DATASET	ELEVON	SREF	4.4120	SQ.FT.
		PTN/P	1.000	H/B	.039	GDV042	-15.000	GDV003	.000	LREF	15.2500	IN.
		BDFLAP	-18.000			GDV039	15.000			BREF	37.9350	IN.
										XMRP	43.5980	IN.
										YMRP	.0000	IN.
										ZMRP	-.4050	IN.
										SCALE	.0405	

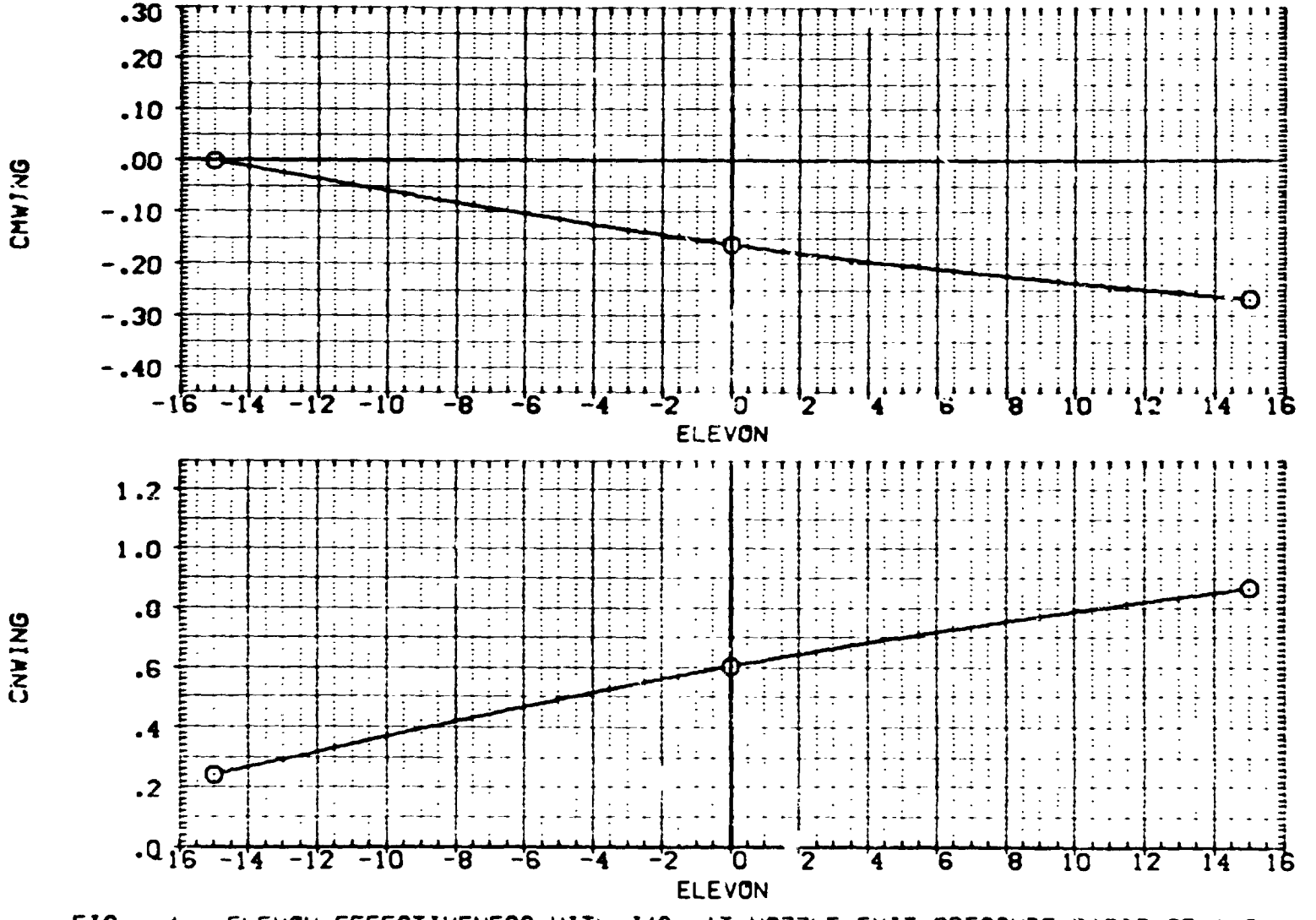


FIG. 4 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

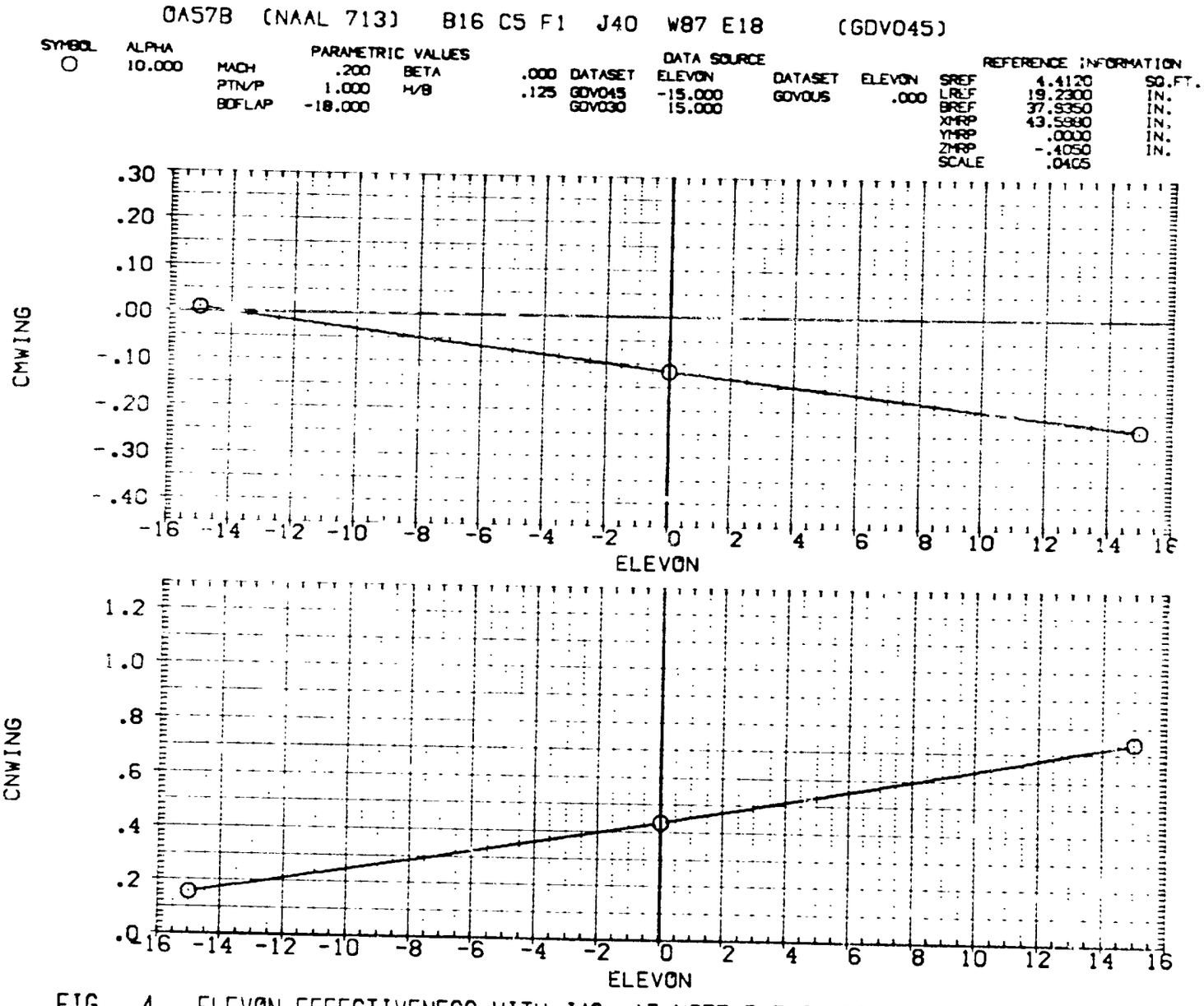


FIG. 4 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

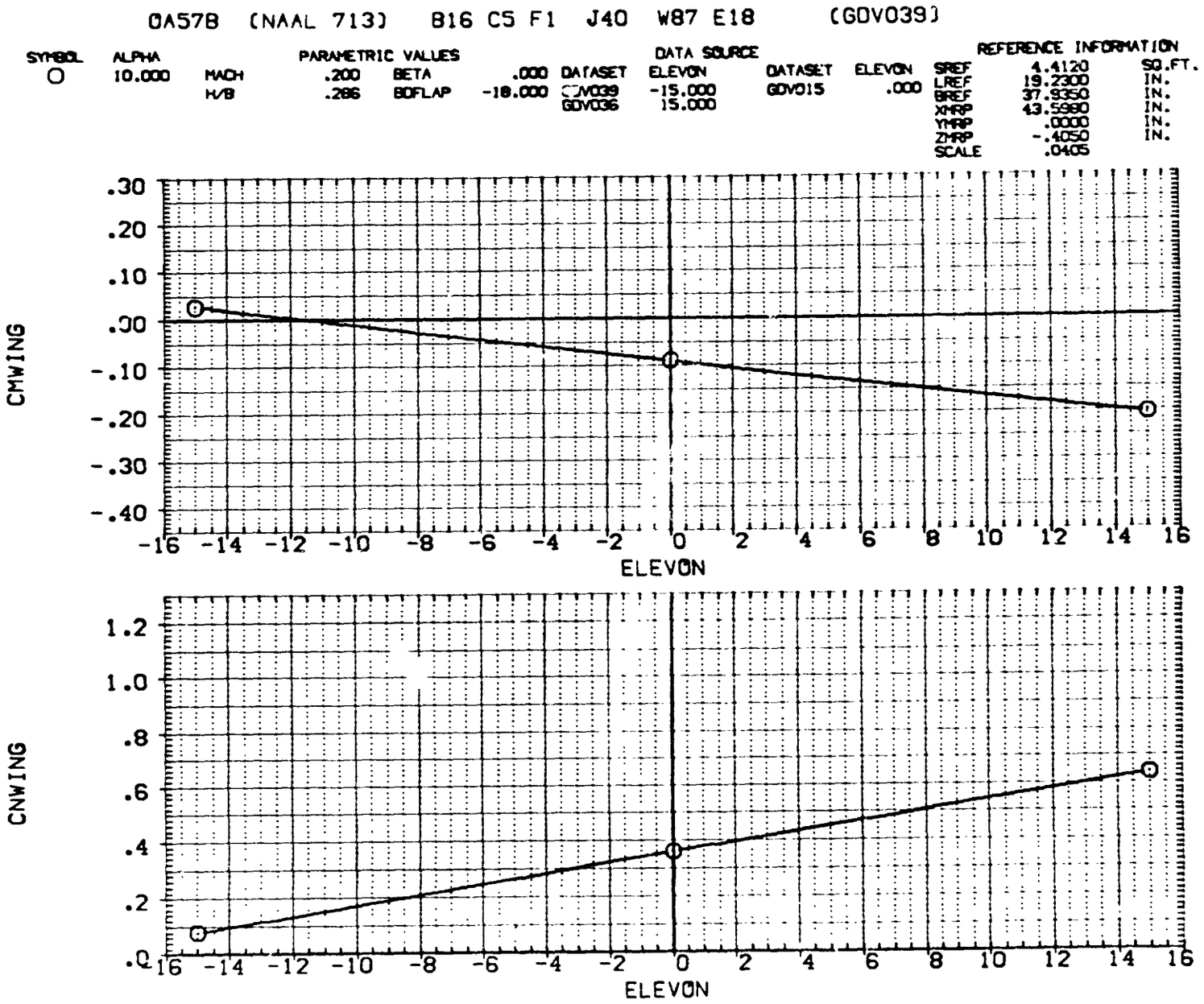


FIG. 4 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

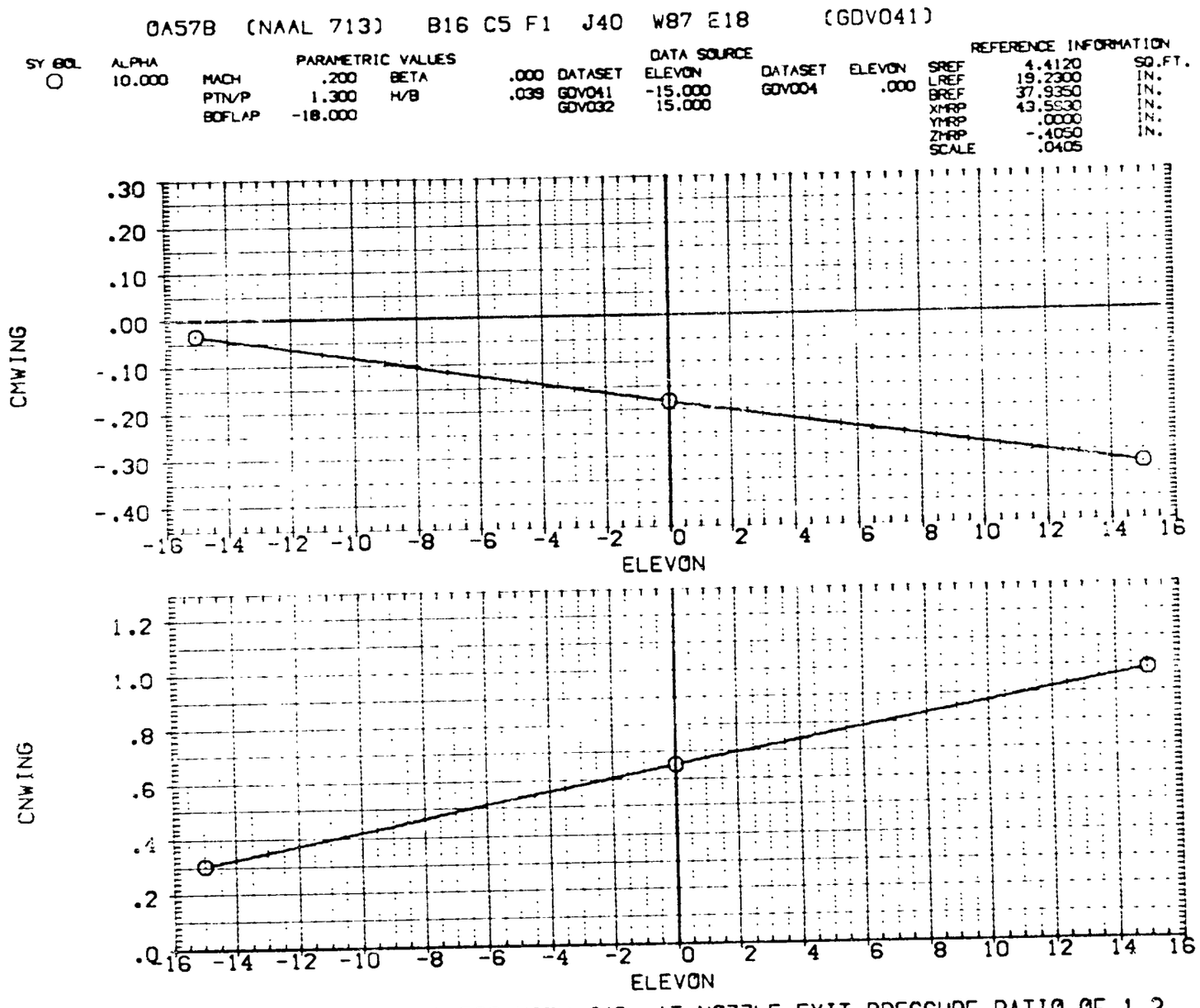


FIG. 5 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

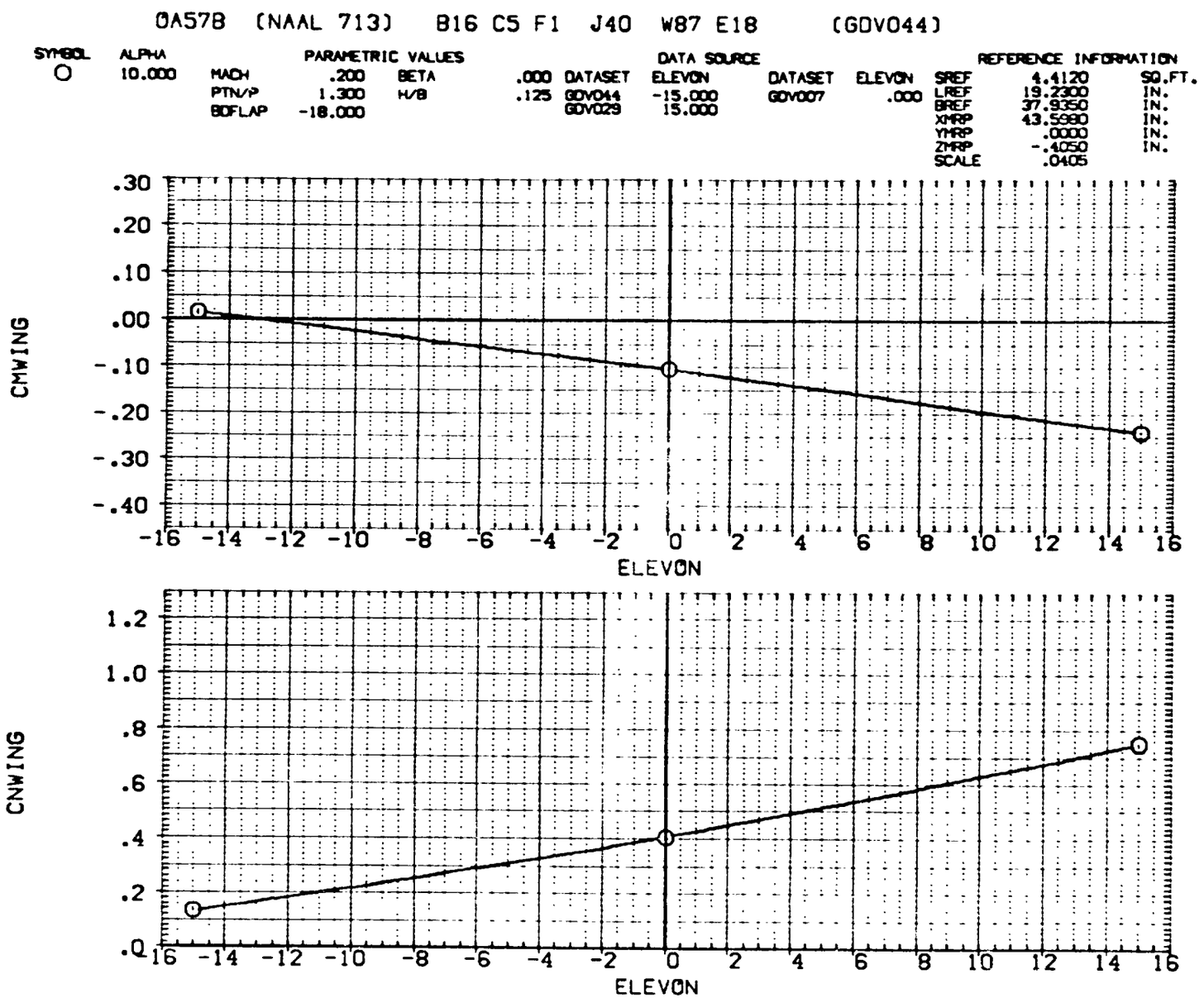


FIG. 5 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

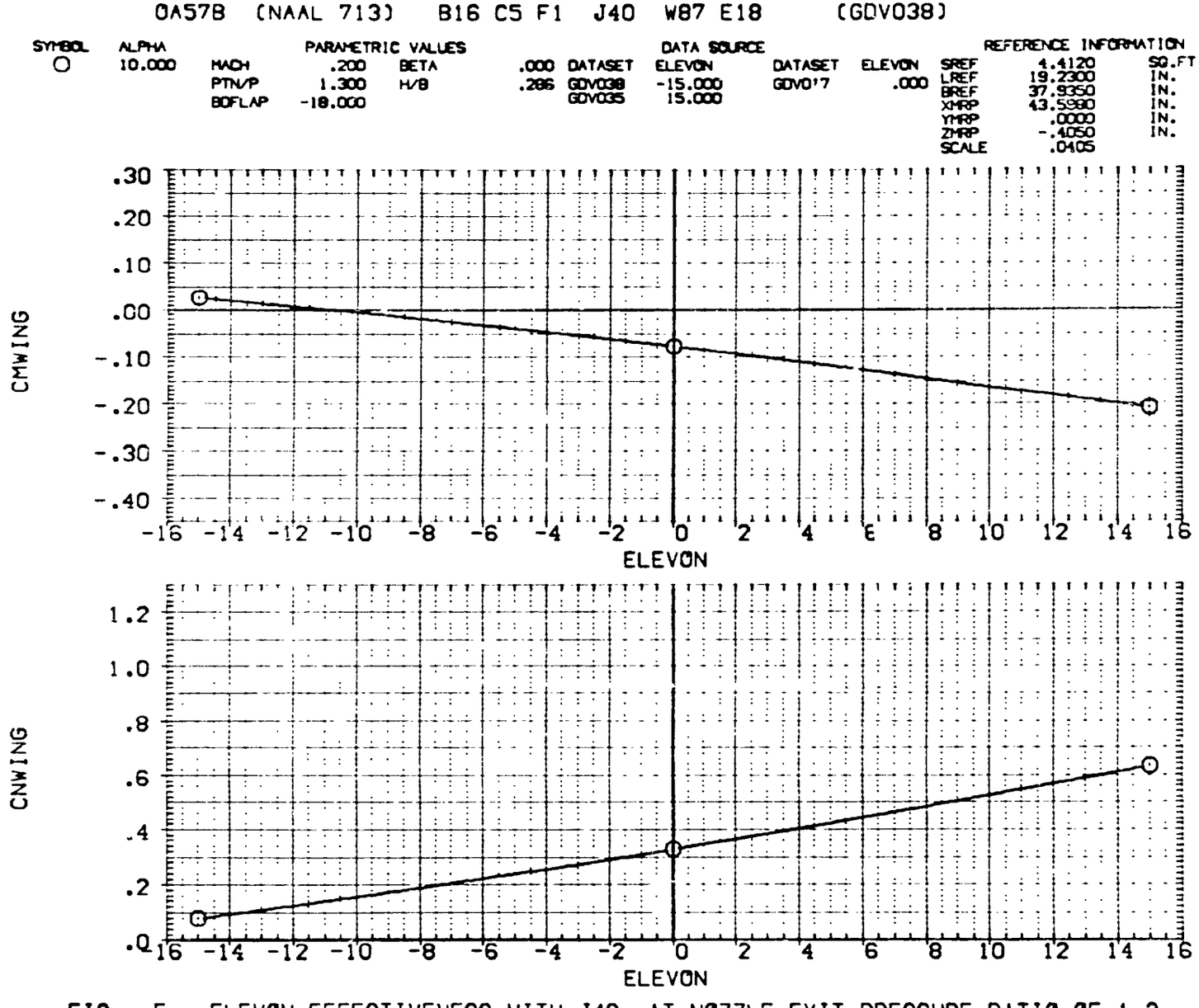


FIG. 5 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

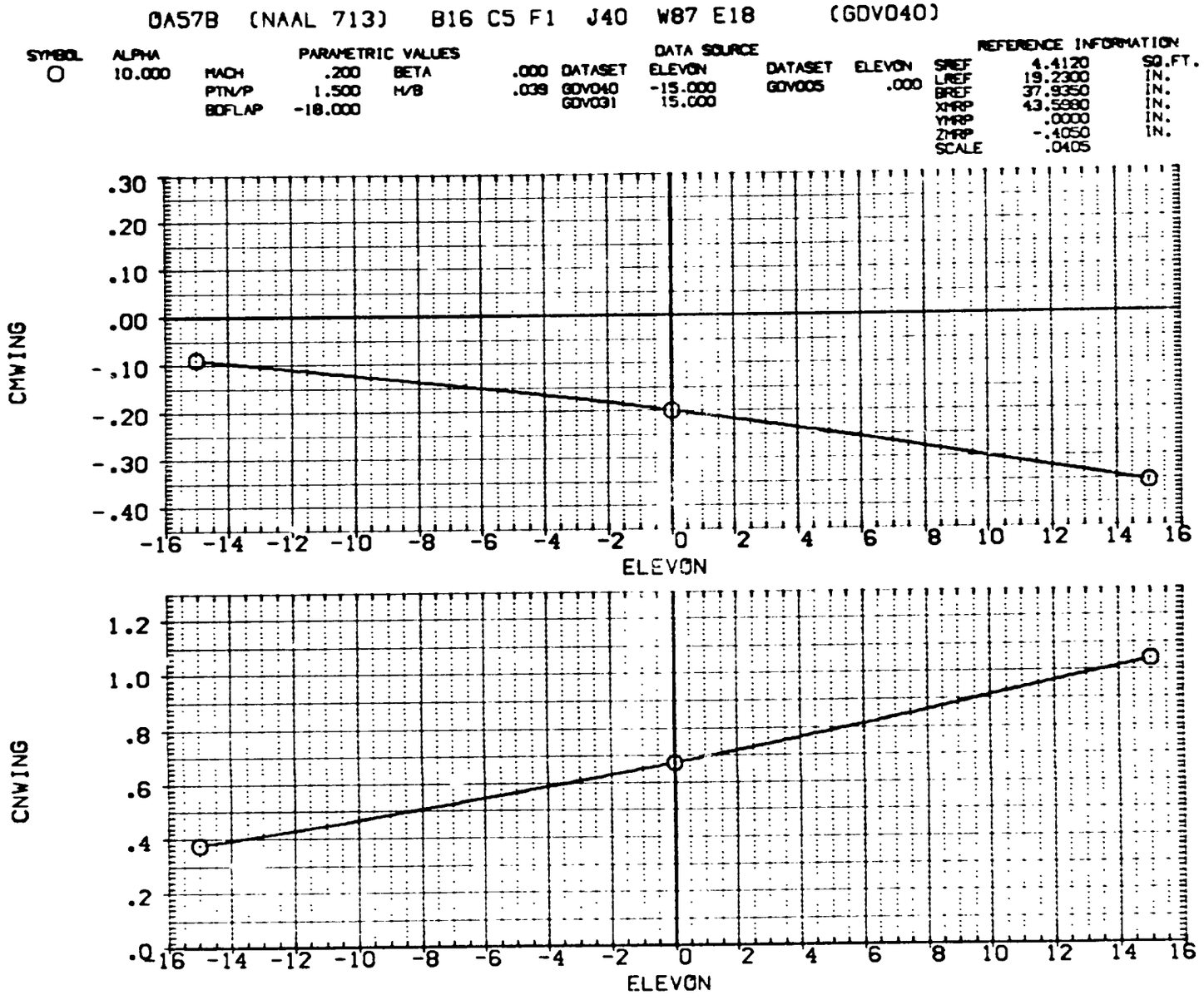


FIG. 6 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.5

SYMBOL	ALPHA	PARAMETRIC VALUES			DATA SOURCE				REFERENCE INFORMATION		
O	10.000	MACH	.200	BETA	.000	DATASET	ELEVON	DATASET	ELEVON	SREF	4.4120	SQ.FT.
		PTN/P	1.500	H/B	.125	GDV043	-15.000	GDV008	.000	LREF	19.2300	IN.
		BOFLAP	-18.000			GDV028	15.000			BREF	37.9350	IN.
										XMRP	43.5980	IN.
										YMRP	.0000	IN.
										ZMRP	-.4050	IN.
										SCALE	.0405	

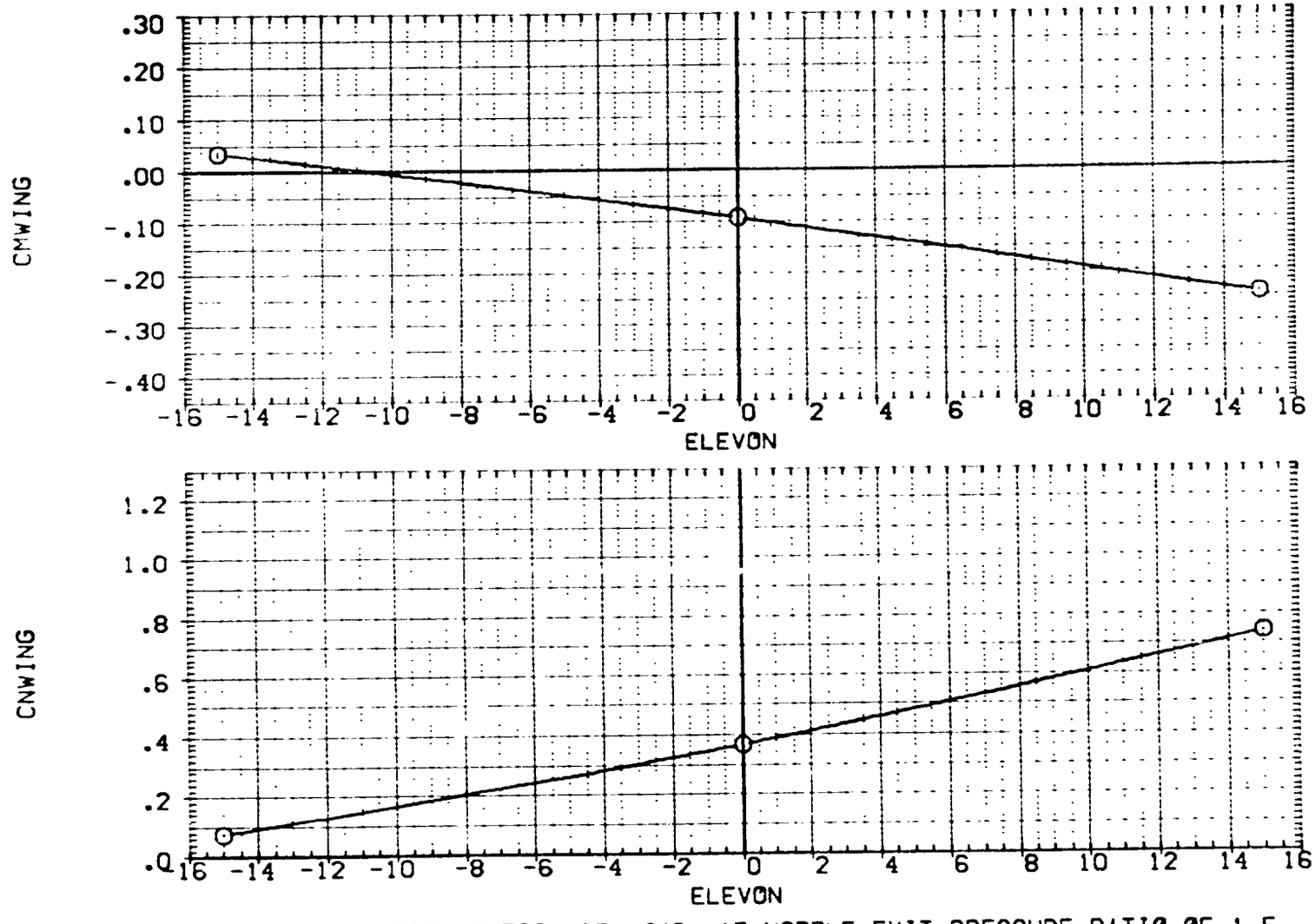


FIG. 6 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.5

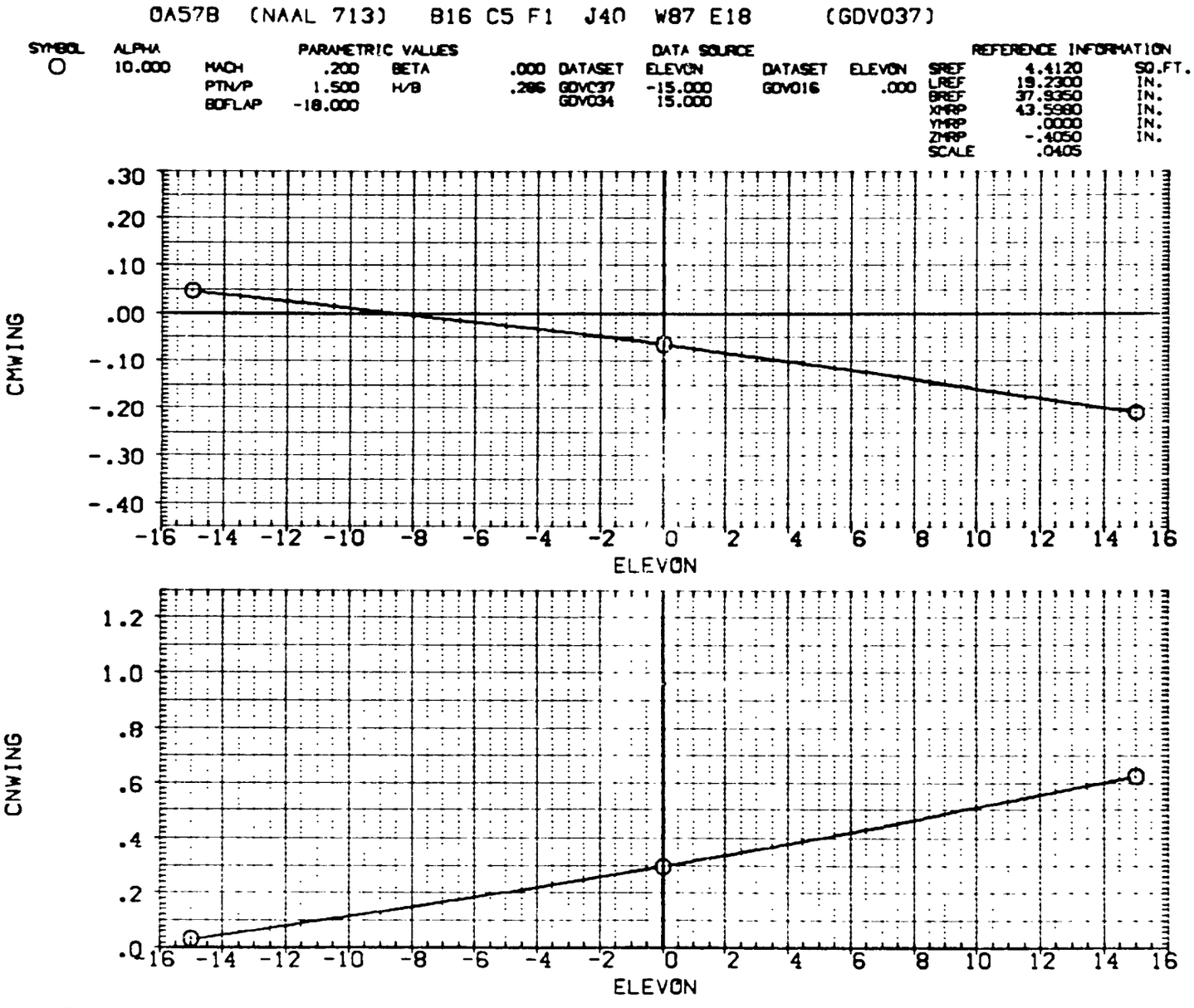


FIG. 6 ELEVON EFFECTIVENESS WITH J40 AT NOZZLE EXIT PRESSURE RATIO OF 1.5

0A57B (NAAL 713) B16 C5 F1 J41 W87 E18 (GDV056)

SYMBOL	ALPHA	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	10.000	MACH	.200	BETA	.000	DATASET	ELEVON	DATASET	ELEVON	SREF	4.4120	SQ.FT.
		PTN/P	1.000	H/B	.039	GDV056	.000	GDV049	15.000	LREF	19.2300	IN.
		BOFLAP	-18.000							BREF	37.9350	IN.
										XMRP	43.5580	IN.
										YMRP	.0000	IN.
										ZMRP	-.4050	IN.
										SCALE	.0405	

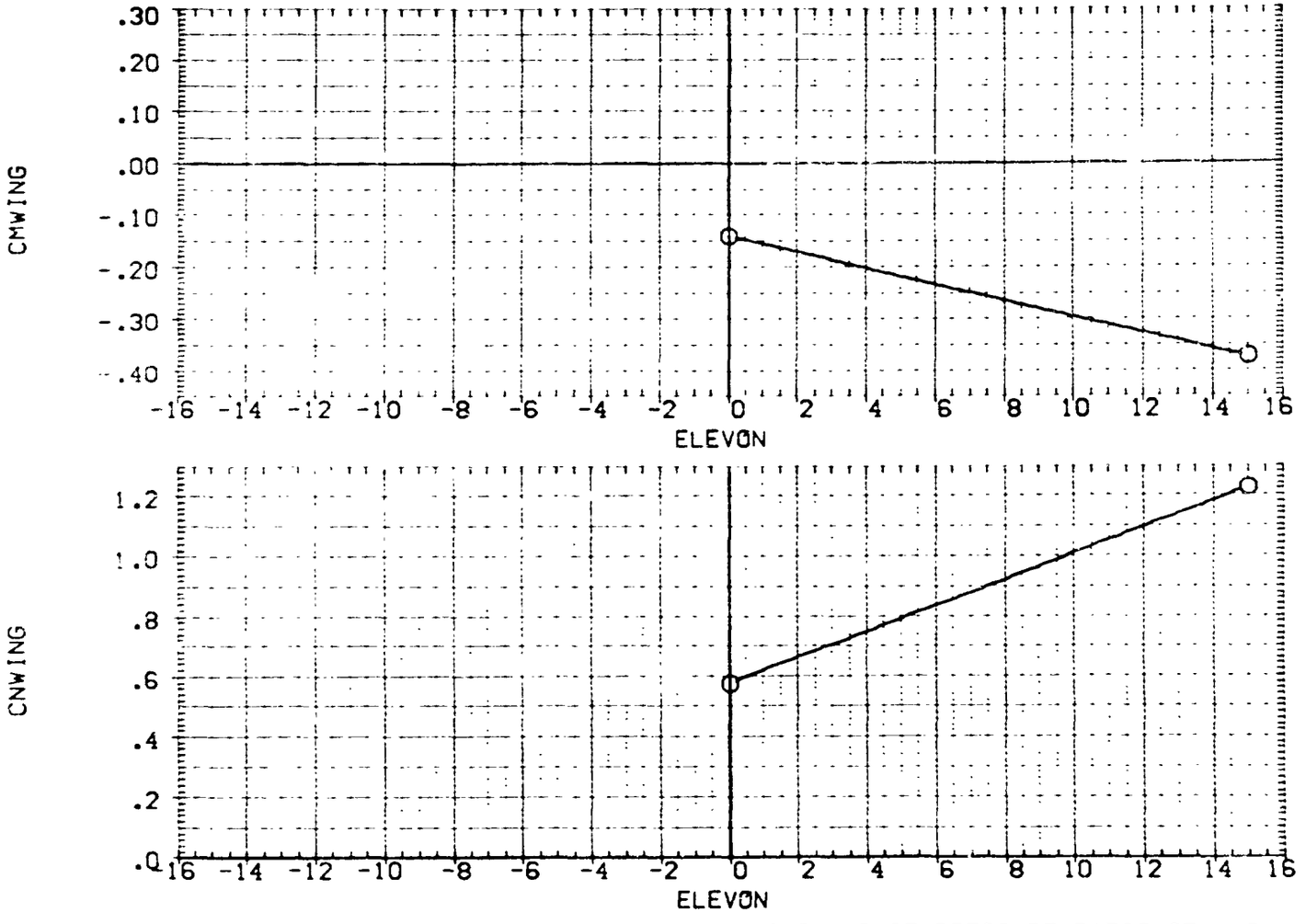


FIG. 7 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

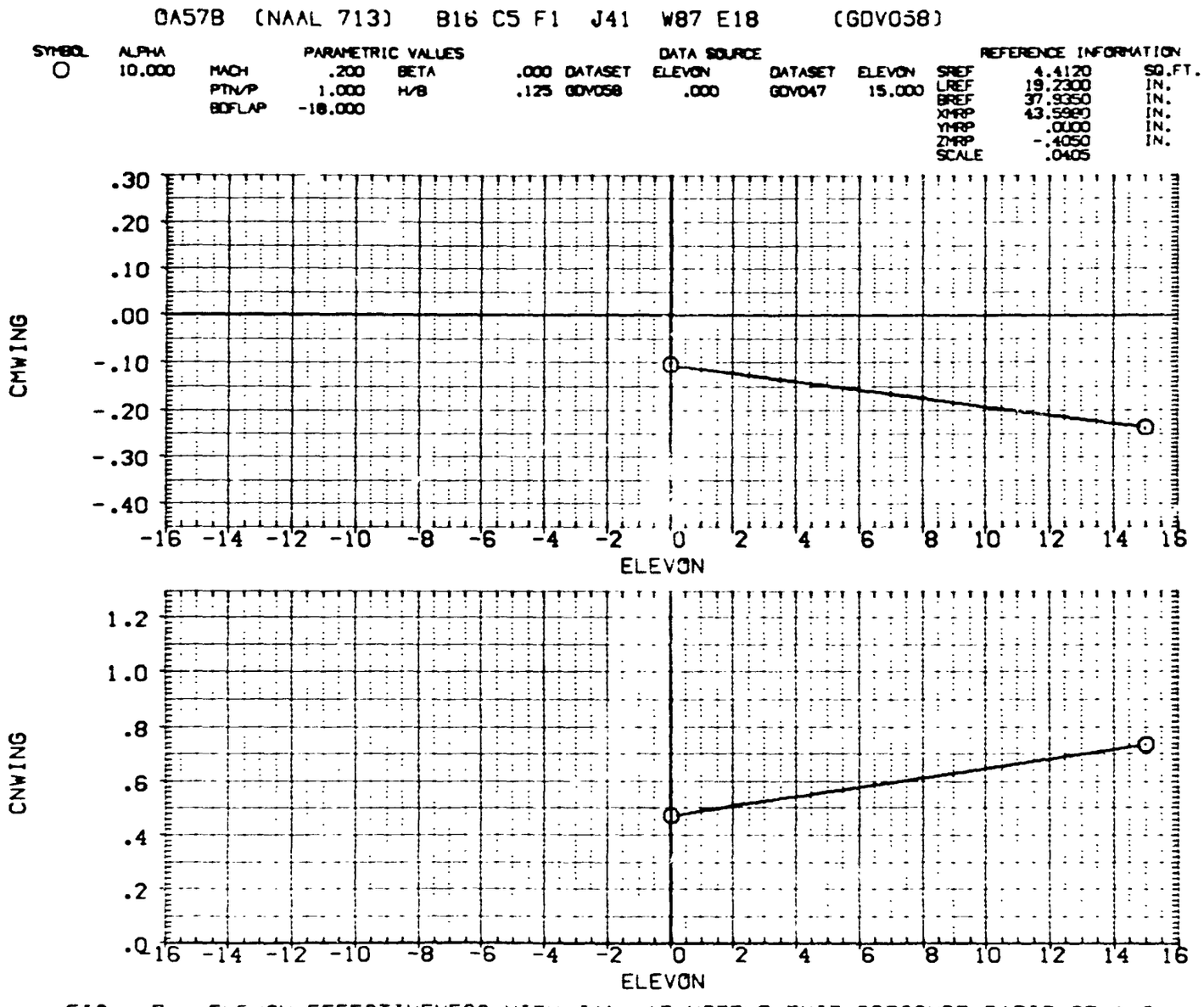


FIG. 7 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

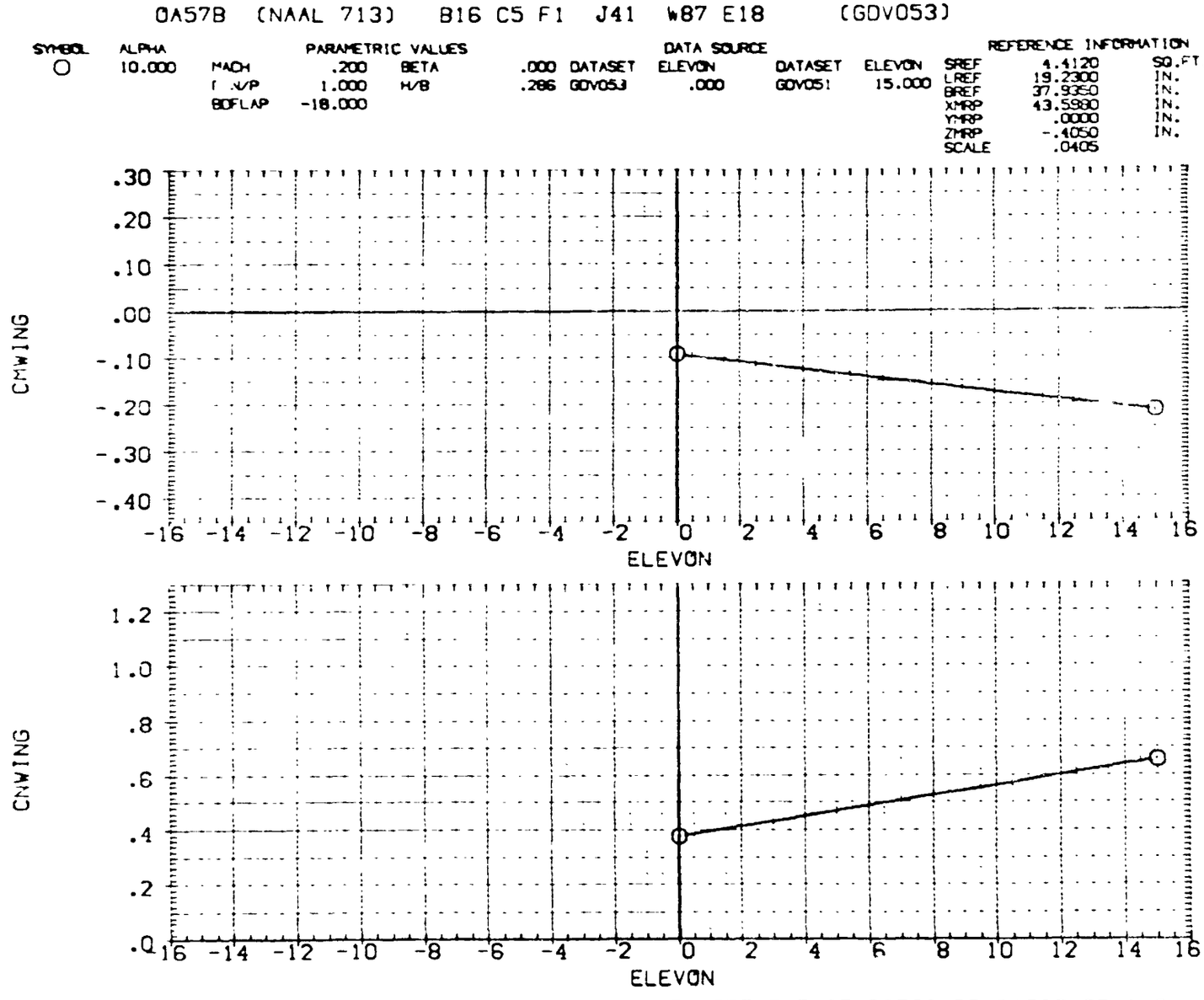


FIG. 7 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.0

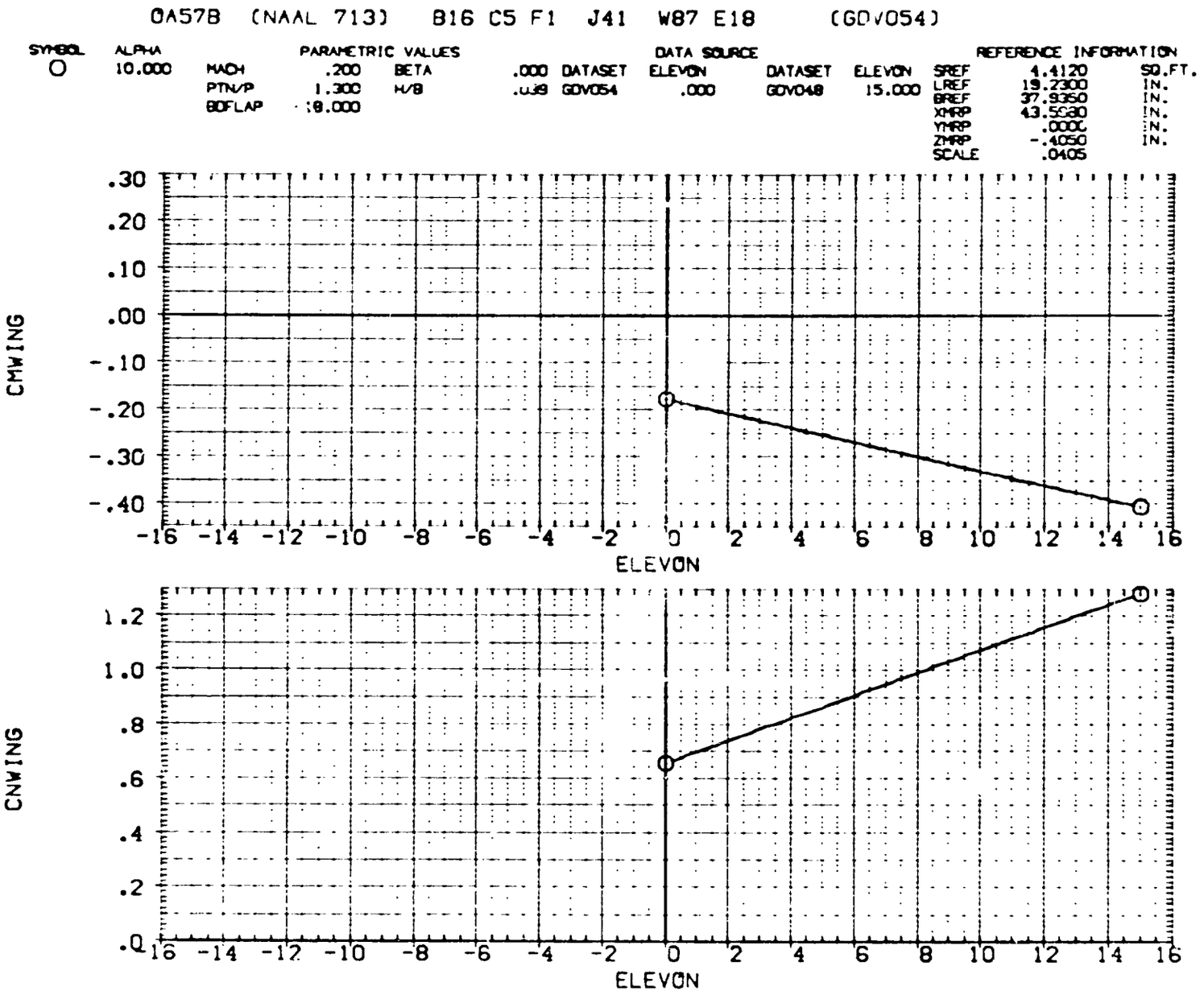


FIG. 8 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

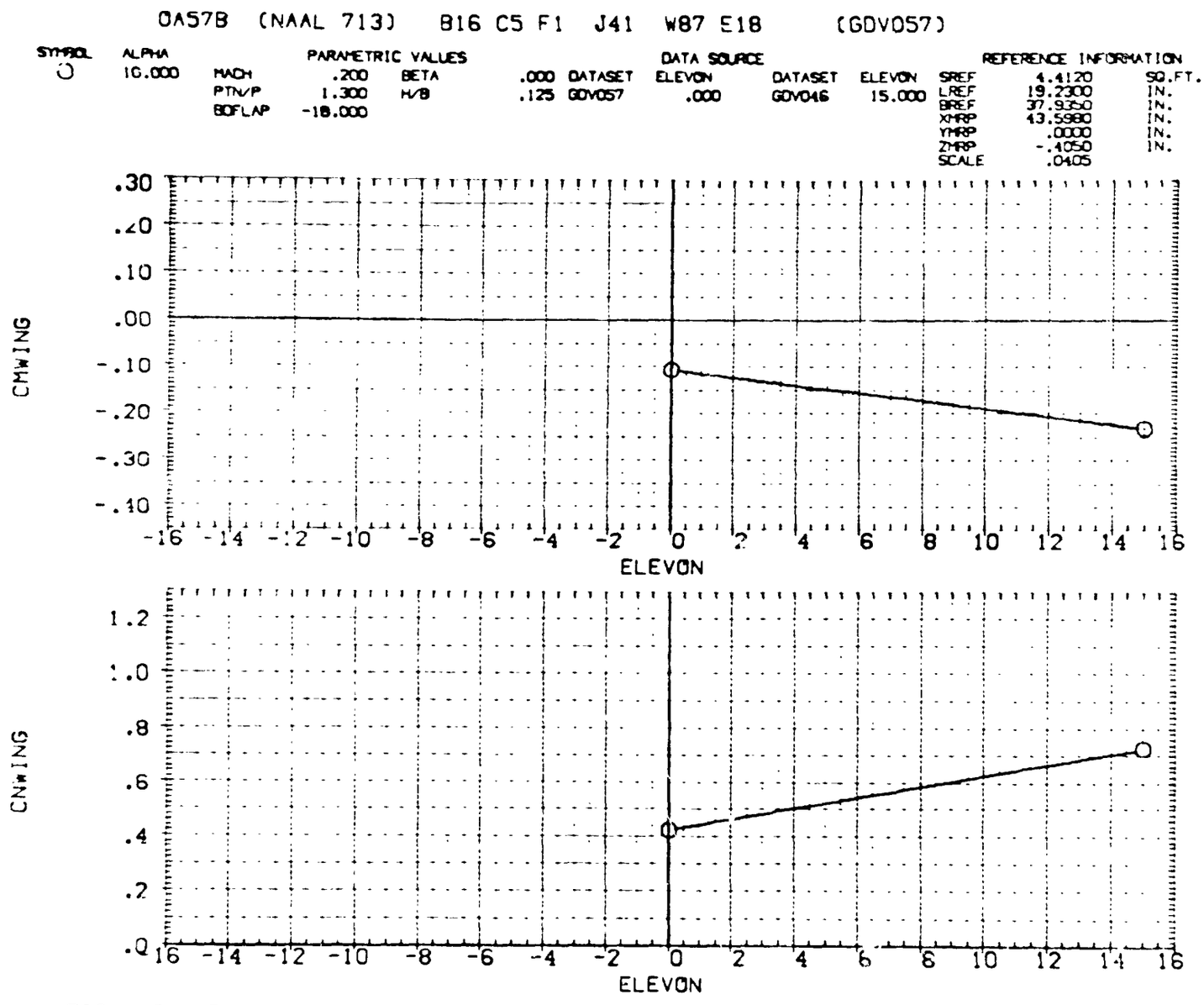


FIG. 8 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

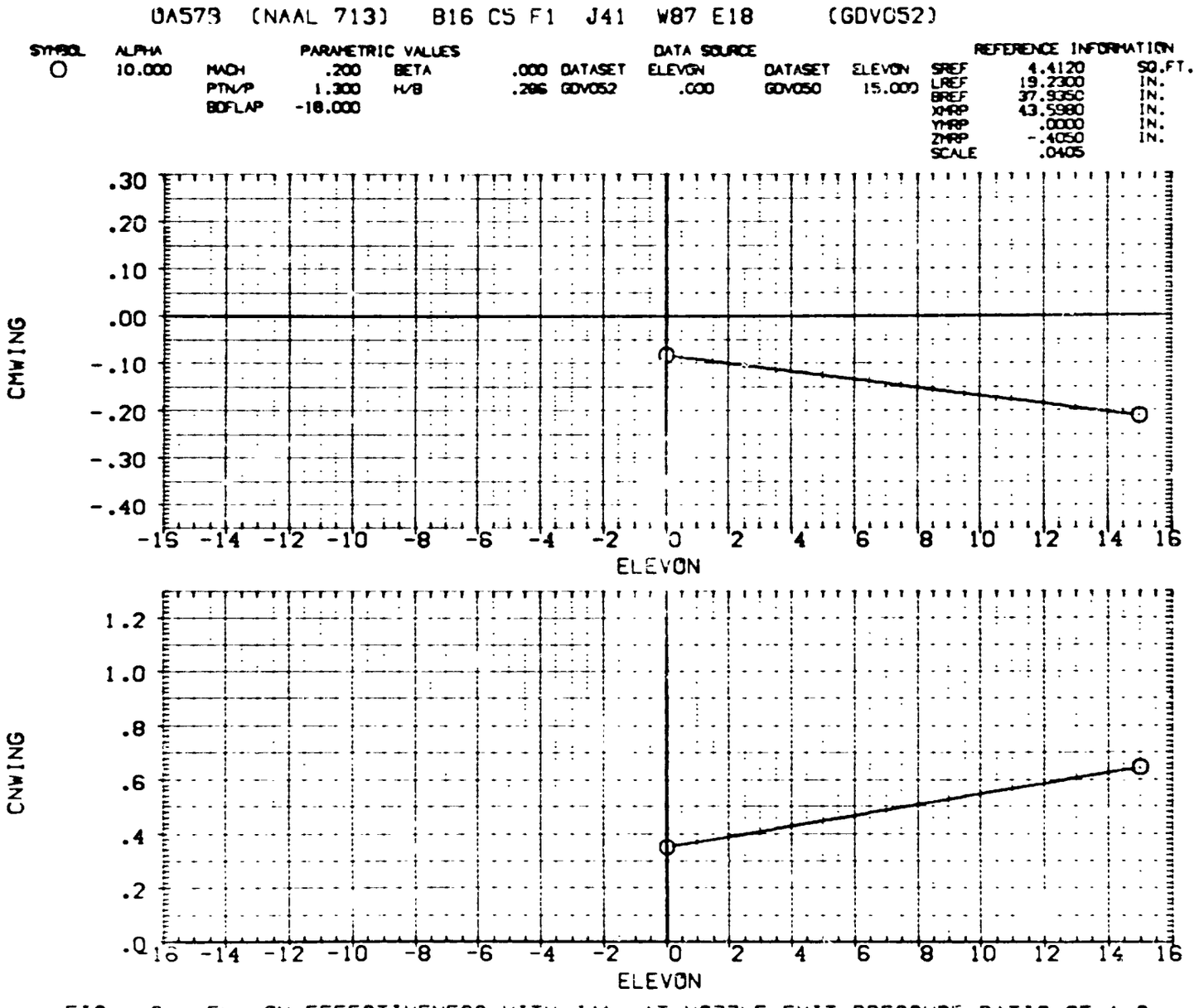


FIG. 8 ELEVON EFFECTIVENESS WITH J41 AT NOZZLE EXIT PRESSURE RATIO OF 1.3

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BOFLAP
(ROVA42)	◇	0A57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.039	1.000	-18.000
(ROVA45)		0A57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.125	1.000	-18.000
(ROVA38)		0A57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.286	1.000	-18.000

REFERENCE INFORMATION		
SREF	4.1120	SQ.FT.
CREF	19.2[illegible]	IN.
BREF	37.93[illegible]	IN.
XMRP	43.59[illegible]	IN.
YMRP	.0000	IN.
ZMRP	-.4056	IN.
SCALE	.0405	

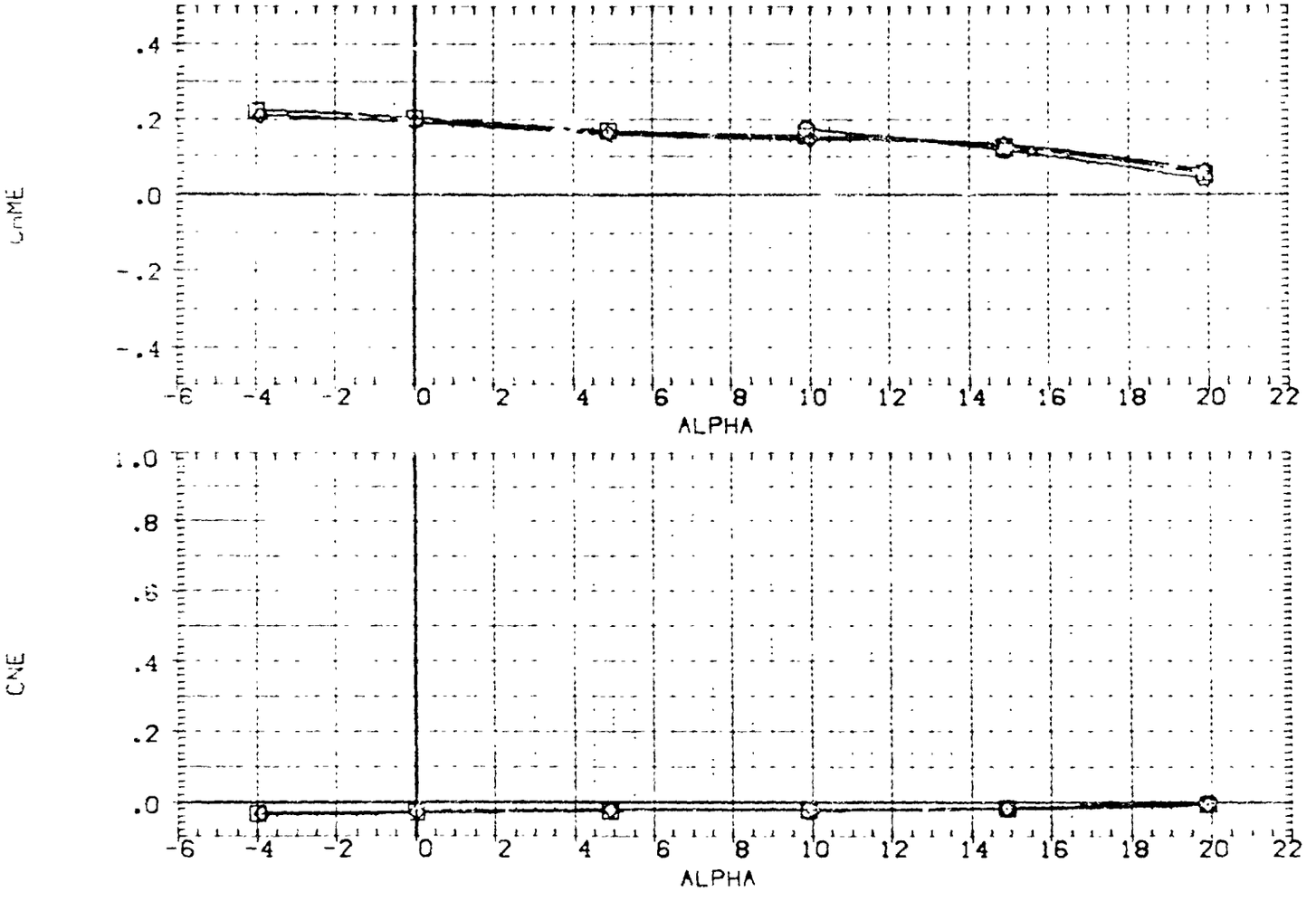


FIG. 9 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .16

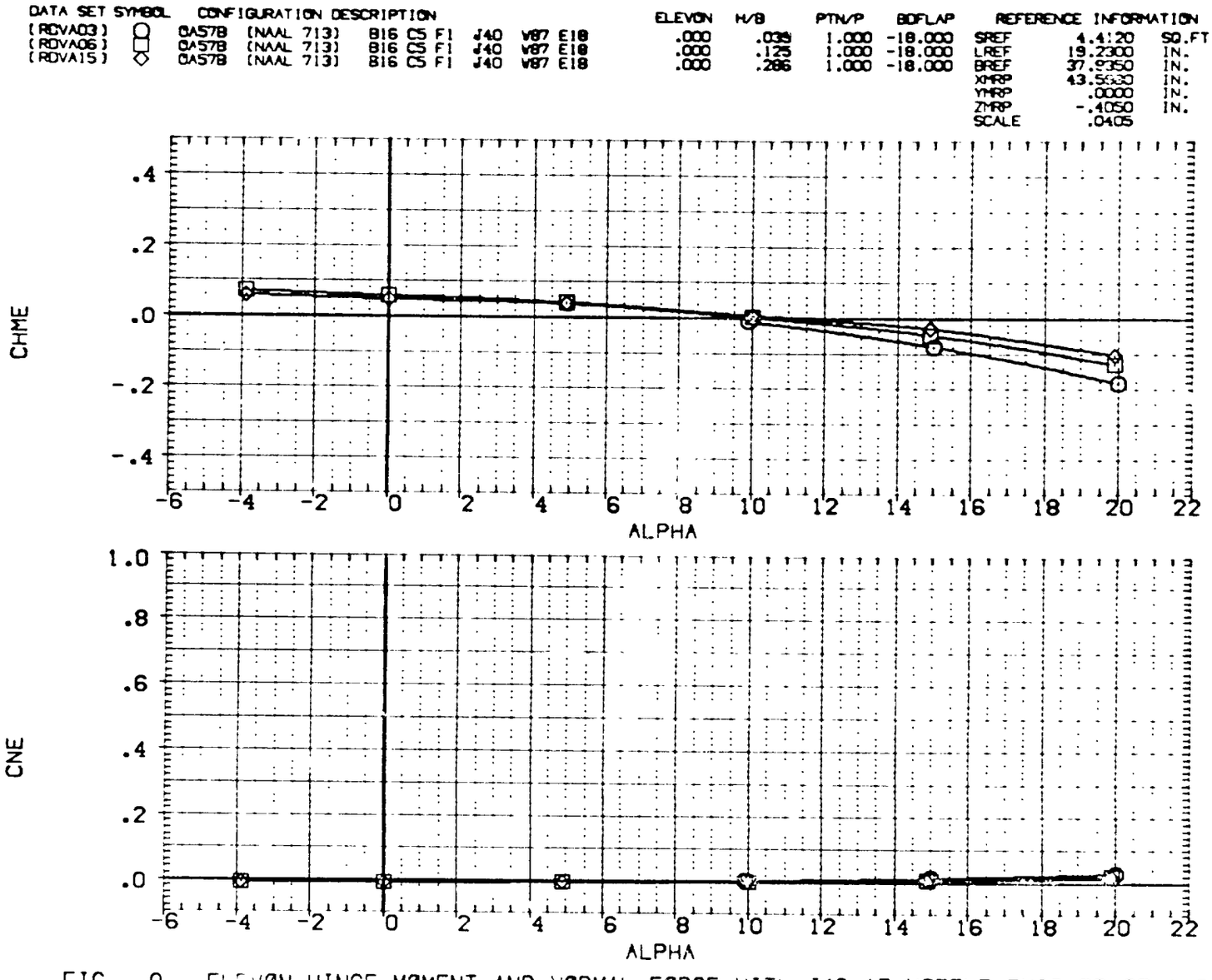


FIG. 9 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .18

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BOFLAP
[ROVA33] ○	0A57B [NAAL 713] B16 C5 F1 J40 V87 E18	15.000	.039	1.000	-18.000
[ROVA30] □	0A57B [NAAL 713] B16 C5 F1 J40 V87 E18	15.000	.125	1.000	-18.000
[ROVA36] ◇	0A57B [NAAL 713] B16 C5 F1 J40 V87 E18	15.000	.286	1.000	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5930	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

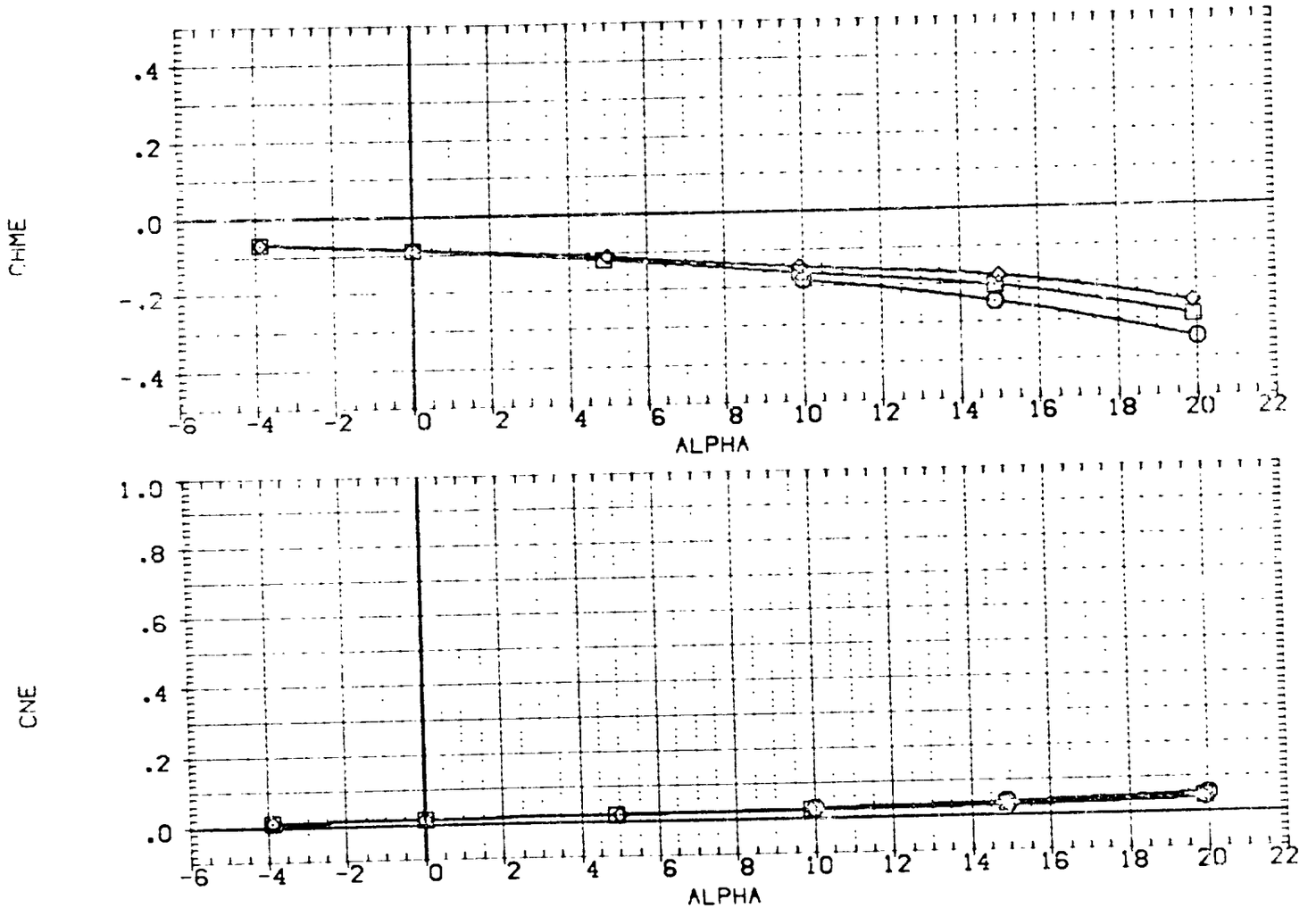


FIG. 9 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .16

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(ROVA41)	○	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	-15.000	.039	1.300	-18.000
(ROVA44)	□	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	-15.000	.125	1.300	-18.000
(ROVA38)	◇	0A578 (NAAL 713) B16 C5 F1 J4C V87 E18	-15.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

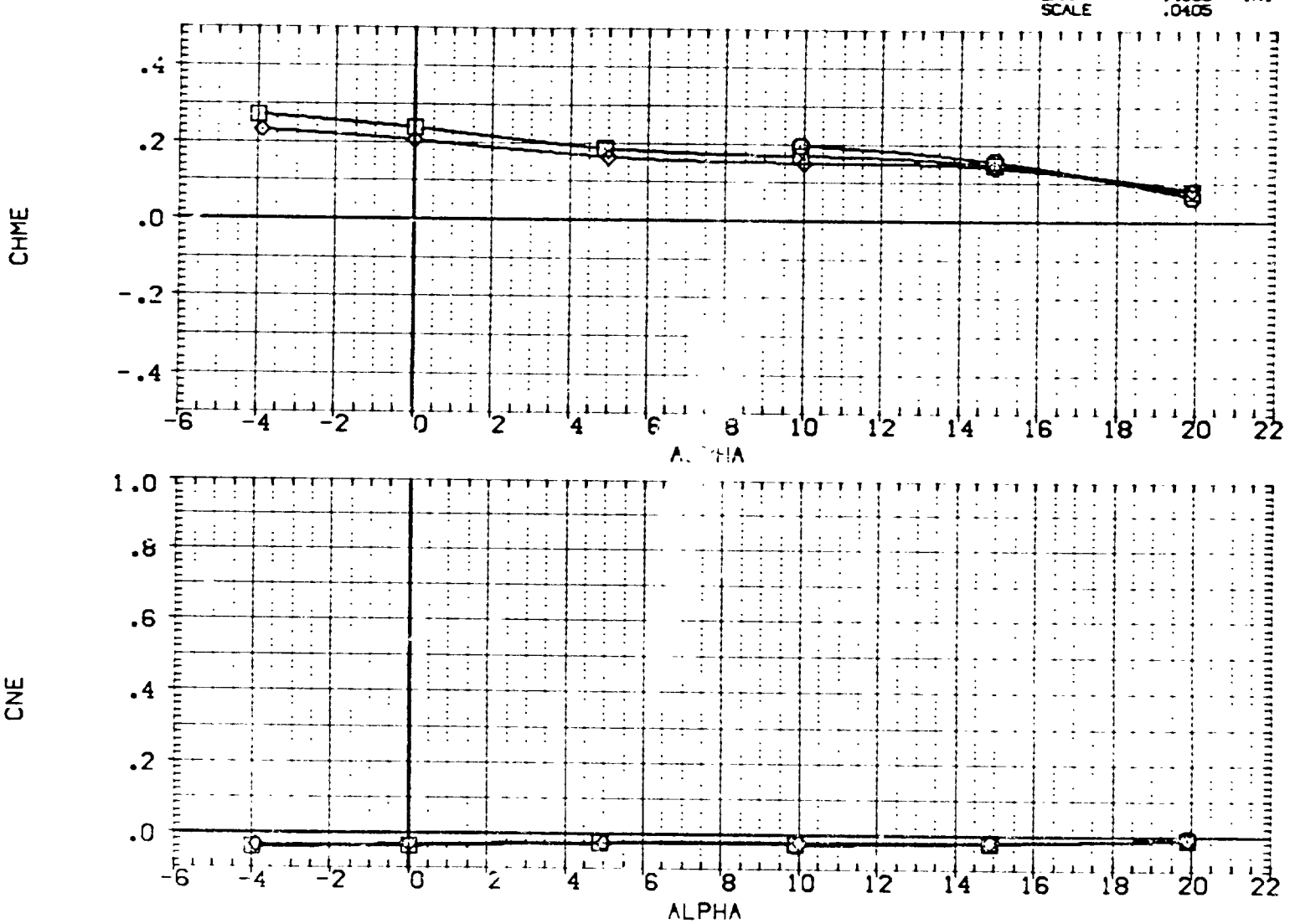


FIG. 10 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J4C AT NOZZLE EXIT PR OF 1.3

(A)MACH = .6

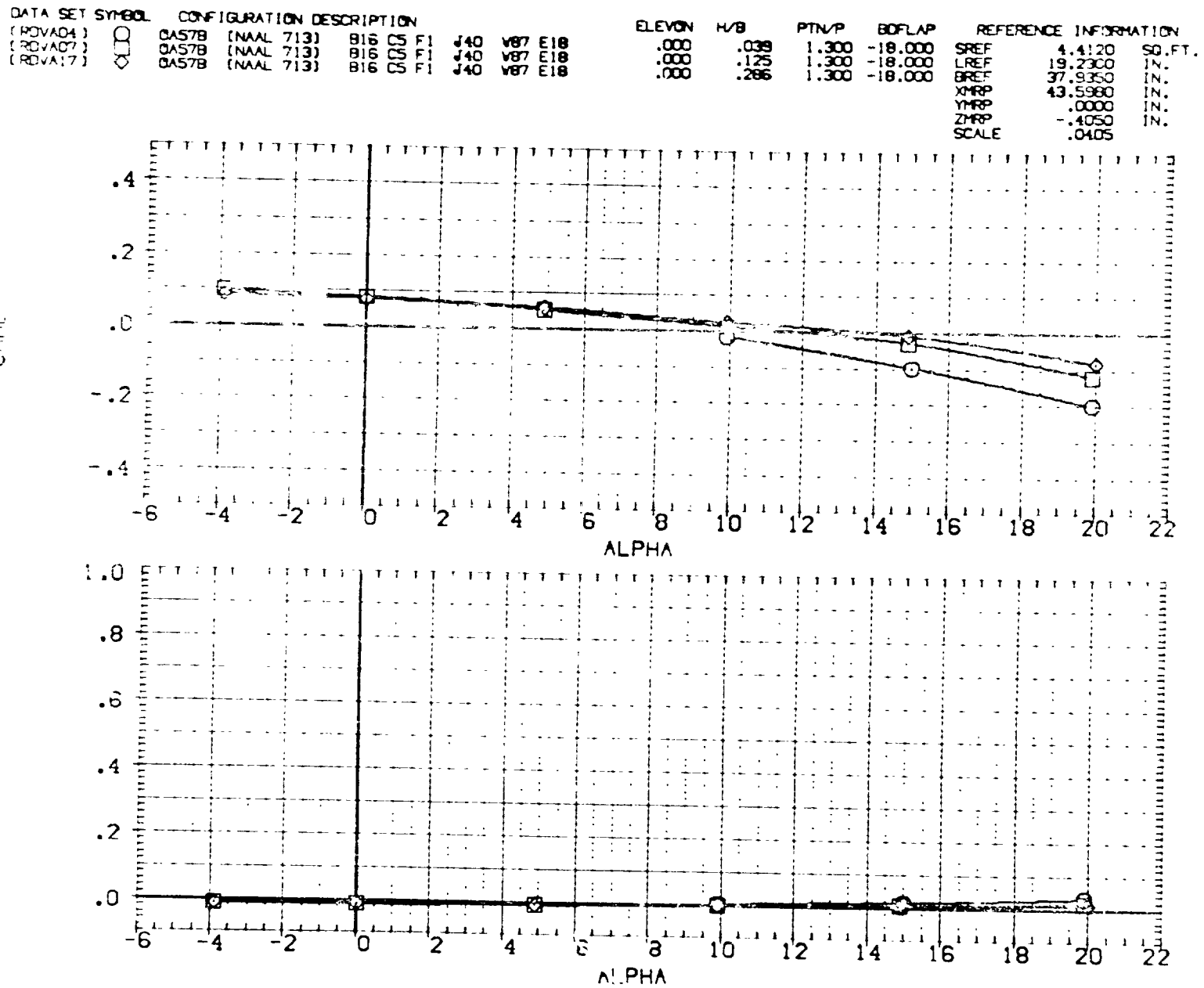


FIG. 10 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.3

(A)MACH = .16

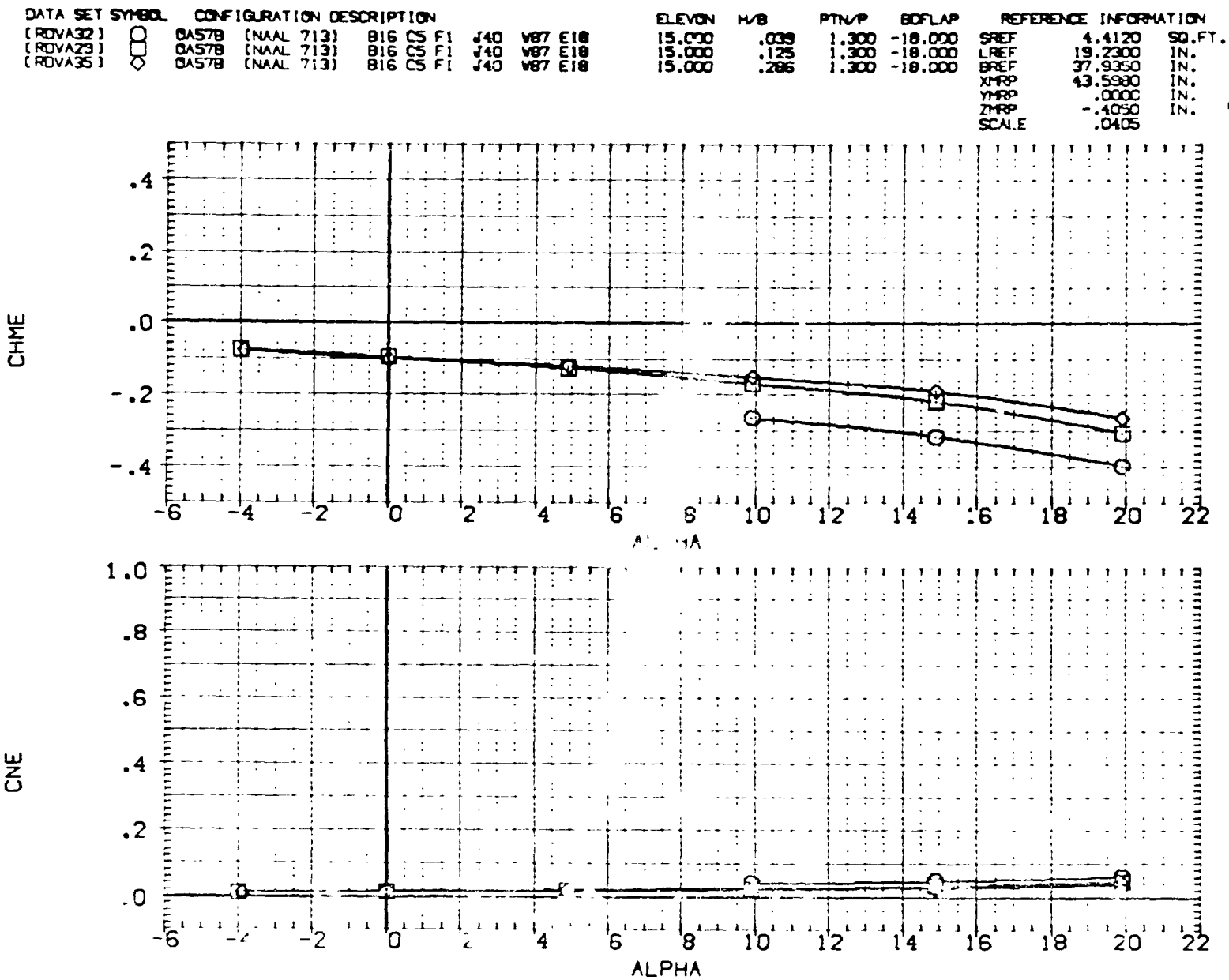


FIG. 10 E 3N HINGE MOMENT AND NORMAL FORCE WI H J40 AT NOZZLE EXIT PR OF 1.3

(A)MACH = .6

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BOFLAP
(ROVA40)	□	OAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.039	1.500	-18.000
(ROVA43)	□	OAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.125	1.500	-18.000
(ROVA37)	◇	OAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2500	IN.
BREF	37.9350	IN.
XMRP	43.5580	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

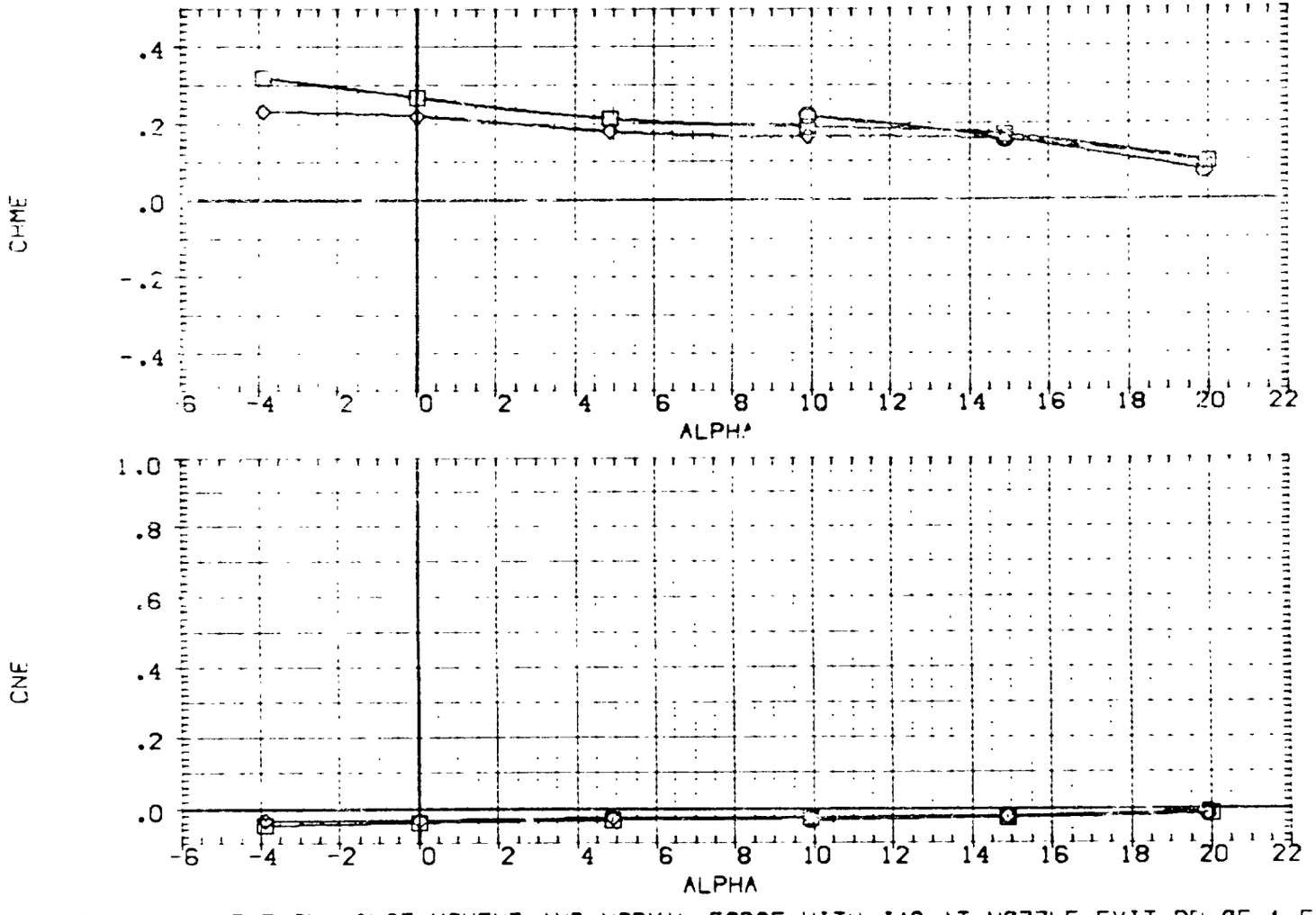


FIG. 11 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.5

(A)MACH = .16

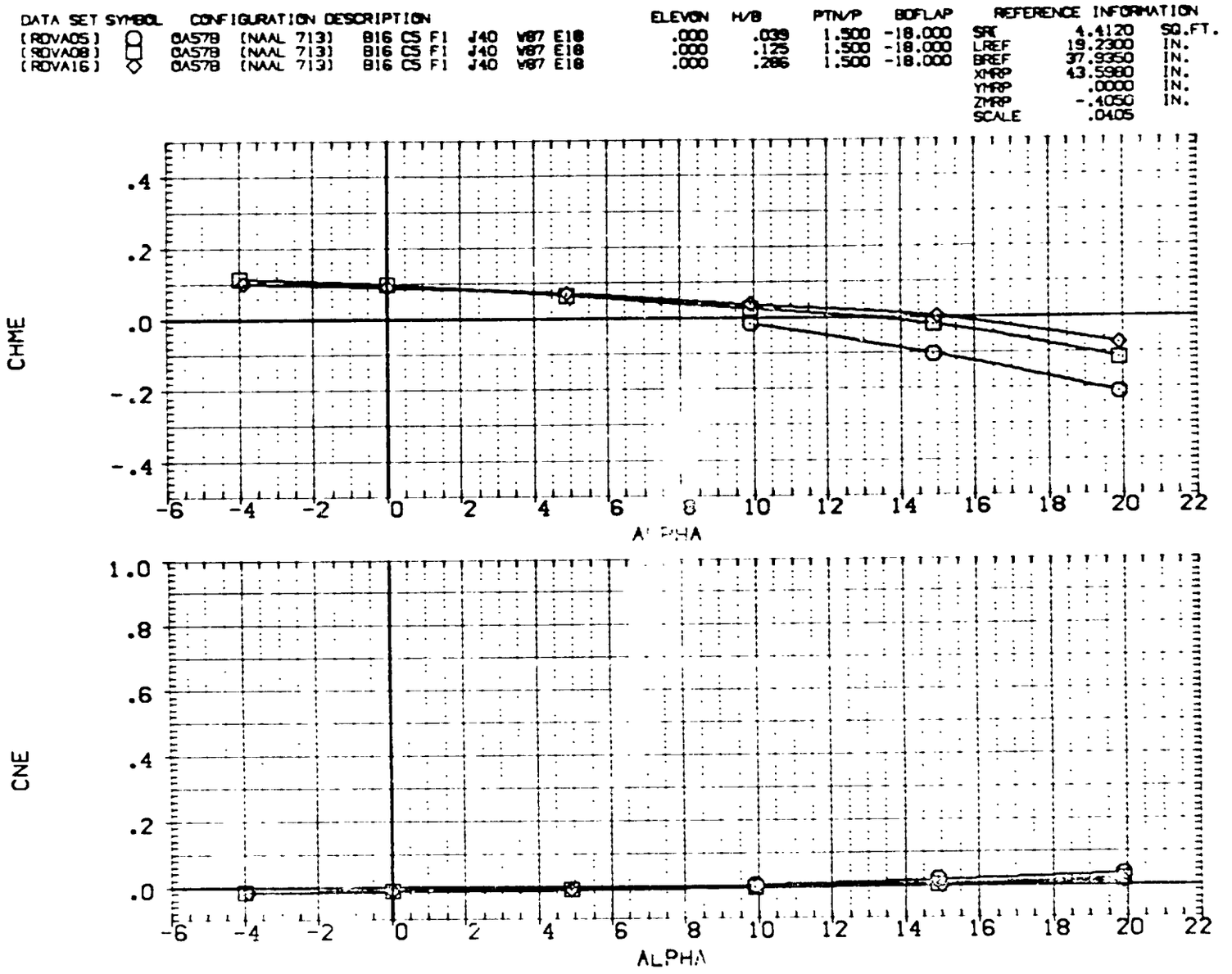


FIG. 11 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.5

(A)MACH = ...

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(RDVA31)	□	0A578	(NAAL 713)	B16	CS F1	J40	V87 E18	15.000	.038	1.500	-18.000
(RDVA28)	△	0A578	(NAAL 713)	B16	CS F1	J40	V87 E18	15.000	.125	1.500	-18.000
(RDVA34)	◇	0A578	(NAAL 713)	B16	CS F1	J40	V87 E18	15.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	1.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9360	IN.
XMRP	43.5800	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

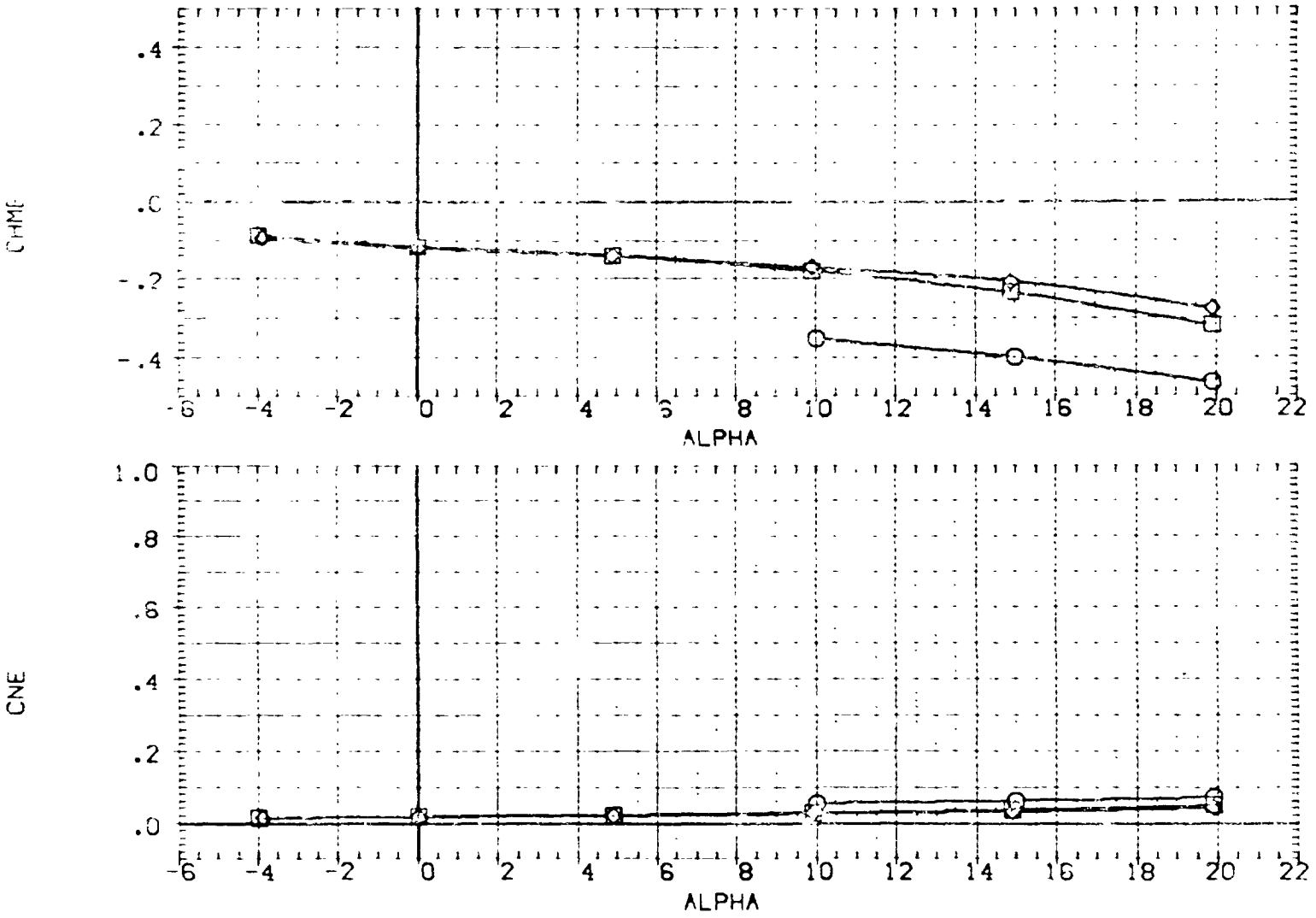


FIG. 11 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J40 AT NOZZLE EXIT PR OF 1.5

(A)MACH = .16

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(RDVA56)	○	0A57B	(NAAL 713)	B16 C5 F1	J41	V87	E18	.000	.039	1.000	-18.000
(RDVA58)	□	0A57B	(NAAL 713)	B16 C5 F1	J41	V87	E18	.000	.125	1.000	-18.000
(RDVA53)	◇	0A57B	(NAAL 713)	B16 C5 F1	J41	V87	E18	.000	.286	1.000	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5580	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

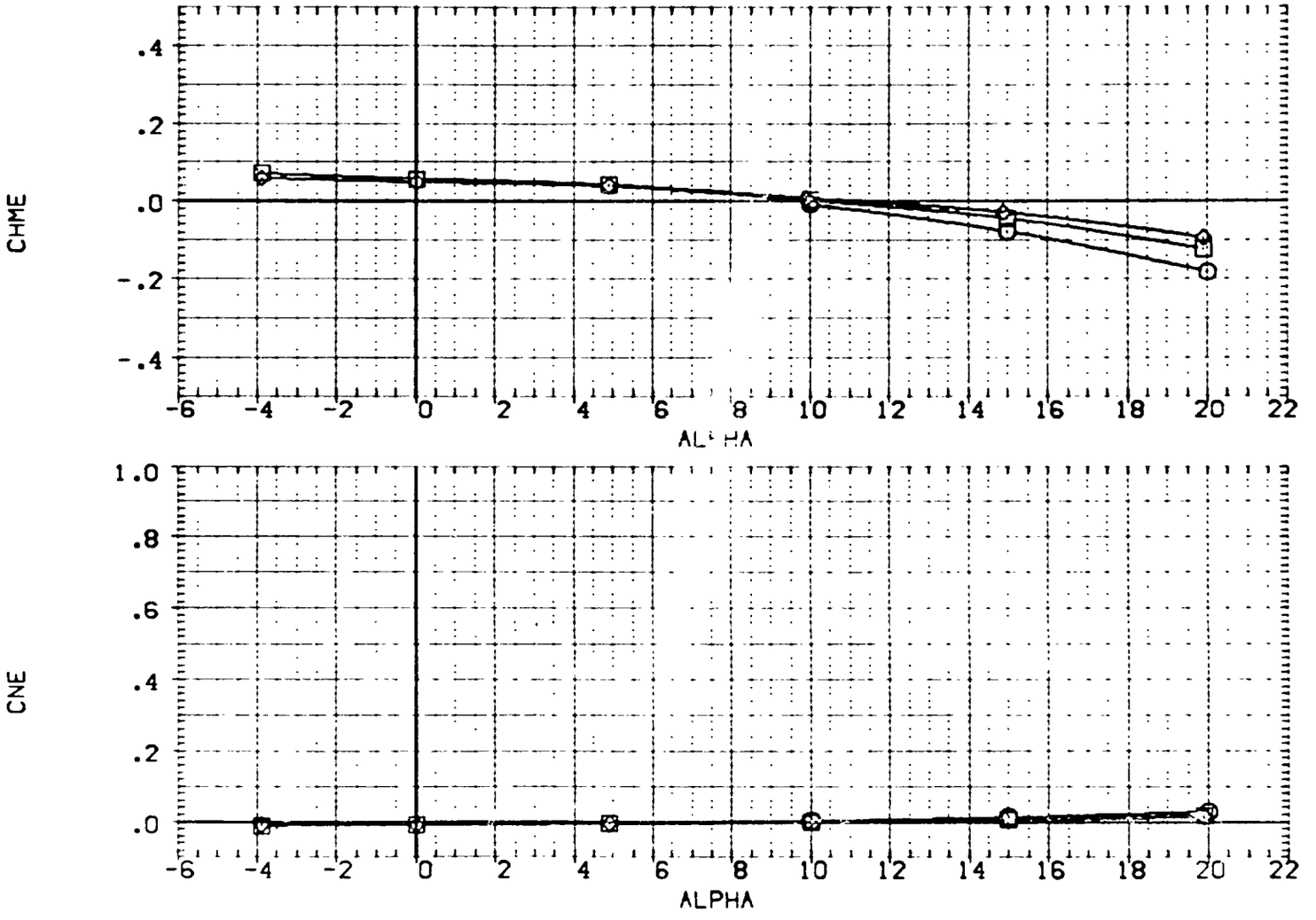


FIG. 12 EL ON HINGE MOMENT AND NORMAL FORCE WITH J41 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .18

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BOFLAP
[RDVA49]	□	3A57B	(NAAL 713)	B16 CS F1	J41	V87 E18	15.000	.039	1.000	-18.000
[RDVA47]	◇	3A57B	(NAAL 713)	B16 CS F1	J41	V87 E18	15.000	.125	1.000	-18.000
[RDVA51]	△	3A57B	(NAAL 713)	B16 CS F1	J41	V87 E18	15.000	.286	1.000	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9000	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

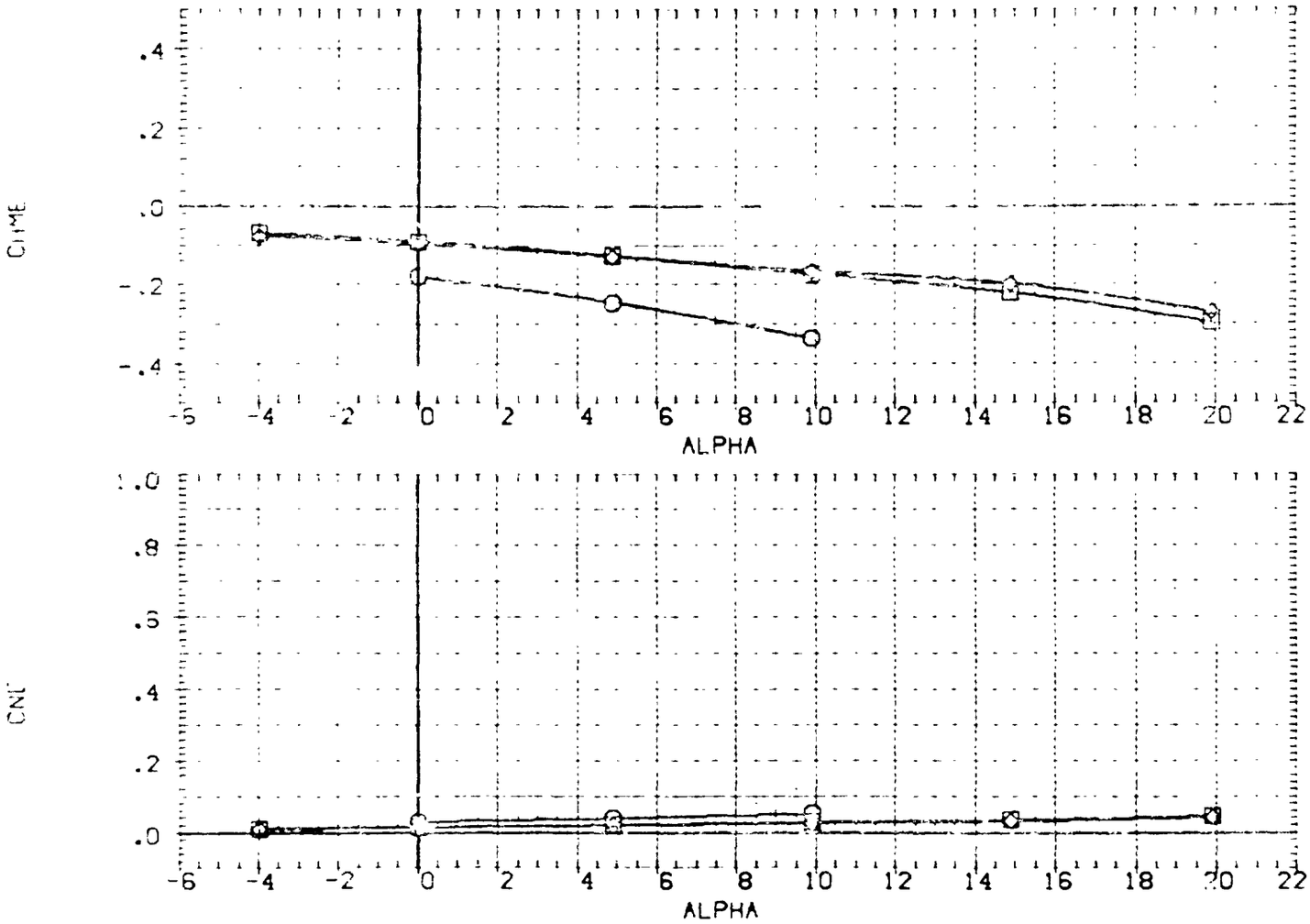


FIG. 12 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J41 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .16

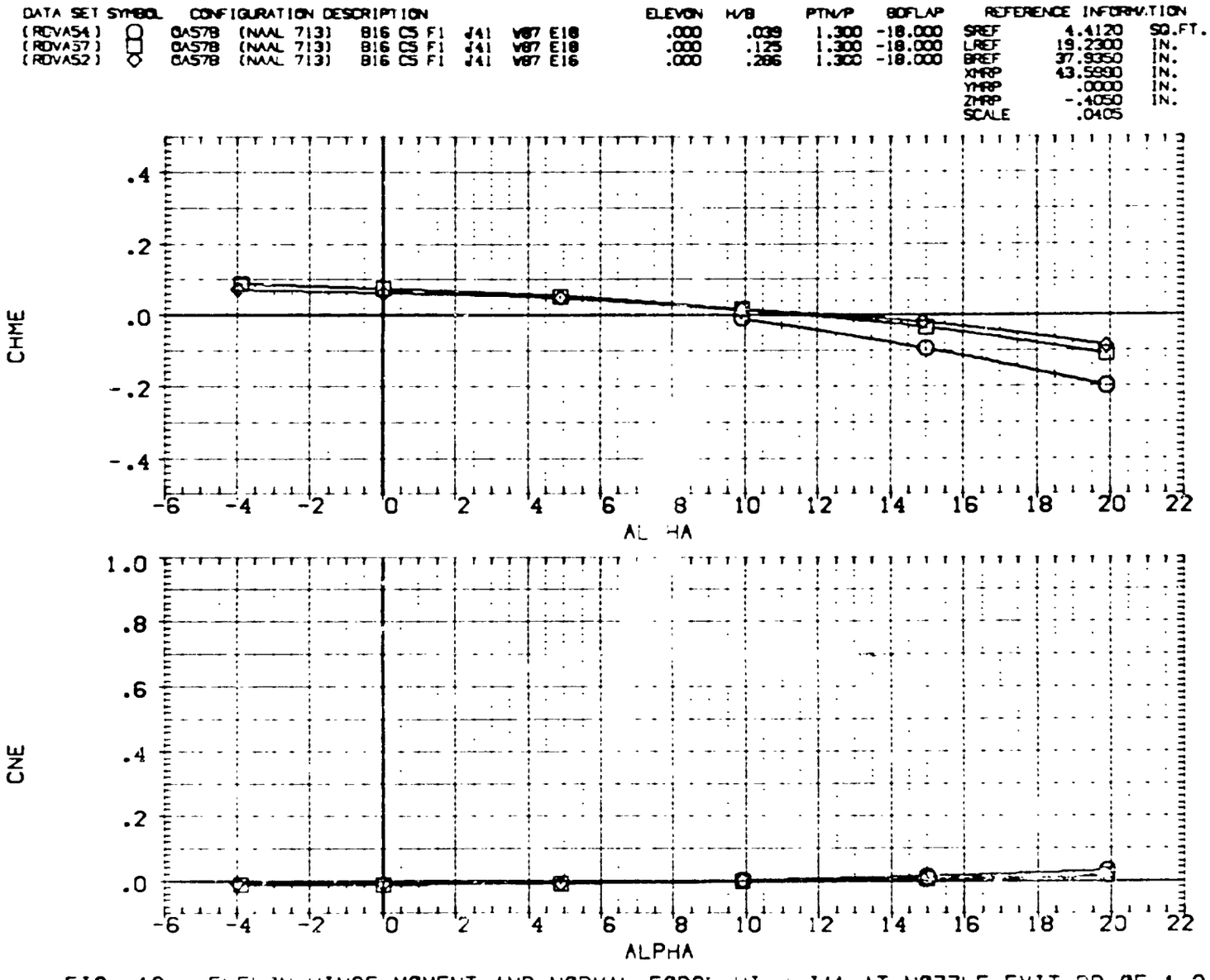


FIG. 13 ELEVON HINGE MOMENT AND NORMAL FORCE WI + J41 AT NOZZLE EXIT PR OF 1.3

(A)MACH = .16

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BOFLAP
(RDVA48)	□	OA57B	(NAAL 713)	B16 CS F1	J41	V87 E18		15.000	.039	1.300	-18.000
(RDVA46)	◇	OA57B	(NAAL 713)	B16 CS F1	J41	V87 E18		15.000	.125	1.300	-18.000
(RDVA50)	△	OA57B	(NAAL 713)	B16 CS F1	J41	V87 E18		15.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.5300	IN.
XMRP	43.5280	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.3405	

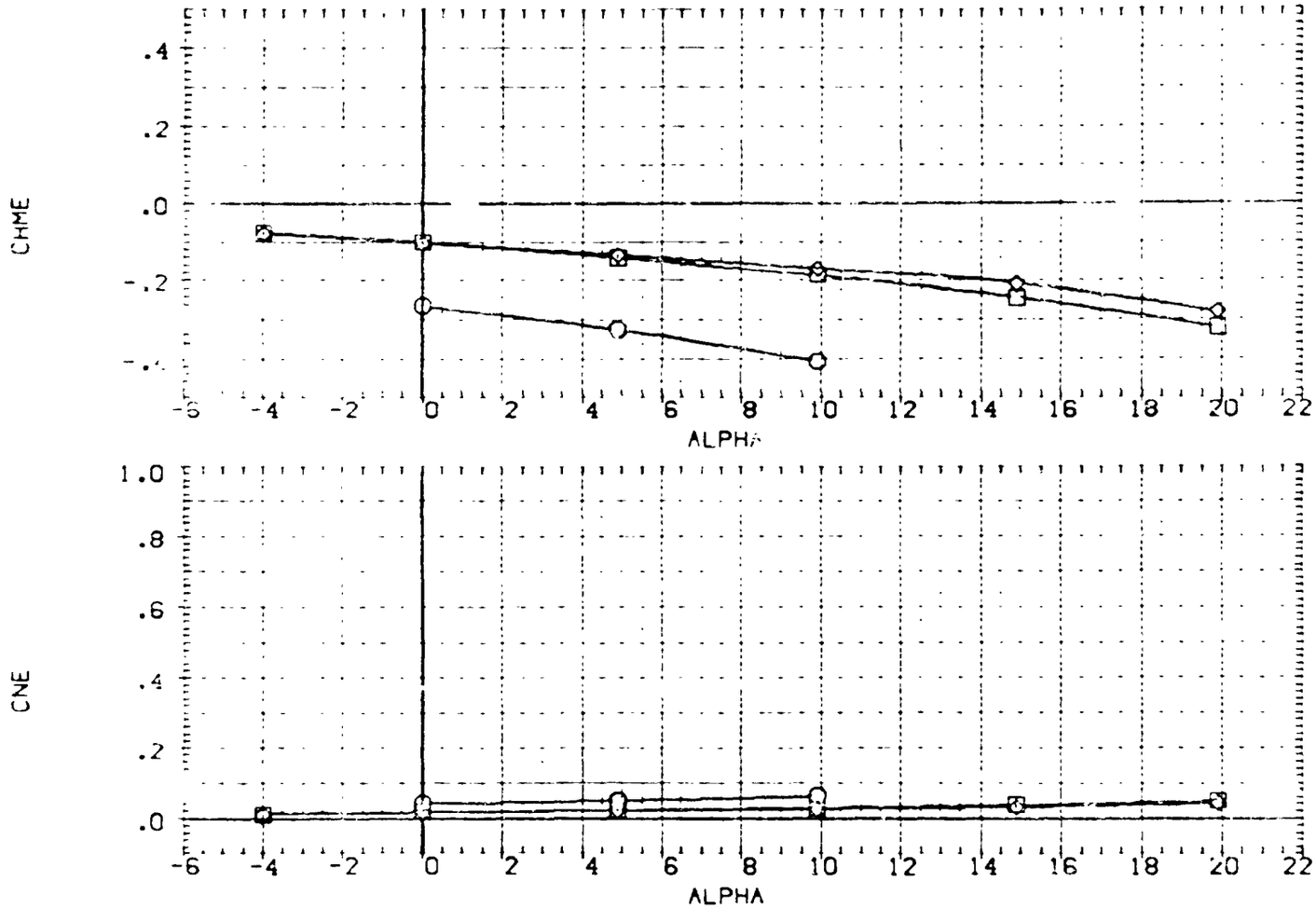


FIG. 13 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J41 AT NOZZLE EXIT PR OF 1.3

(A)MACH = .16

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BOFLAP
(ROVA64)	○	0A57B (NAAL 713) B16 C5 F1 J42 W87 E18	.000	.039	1.000	-18.000
(ROVA67)	□	0A57B (NAAL 713) B16 C5 F1 J42 W87 E18	.000	.125	1.000	-18.000
(ROVA70)	◇	0A57B (NAAL 713) B16 C5 F1 J42 W87 E18	.000	.286	1.000	-18.000

REFERENCE INFORMATION		
SREF	4.412	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

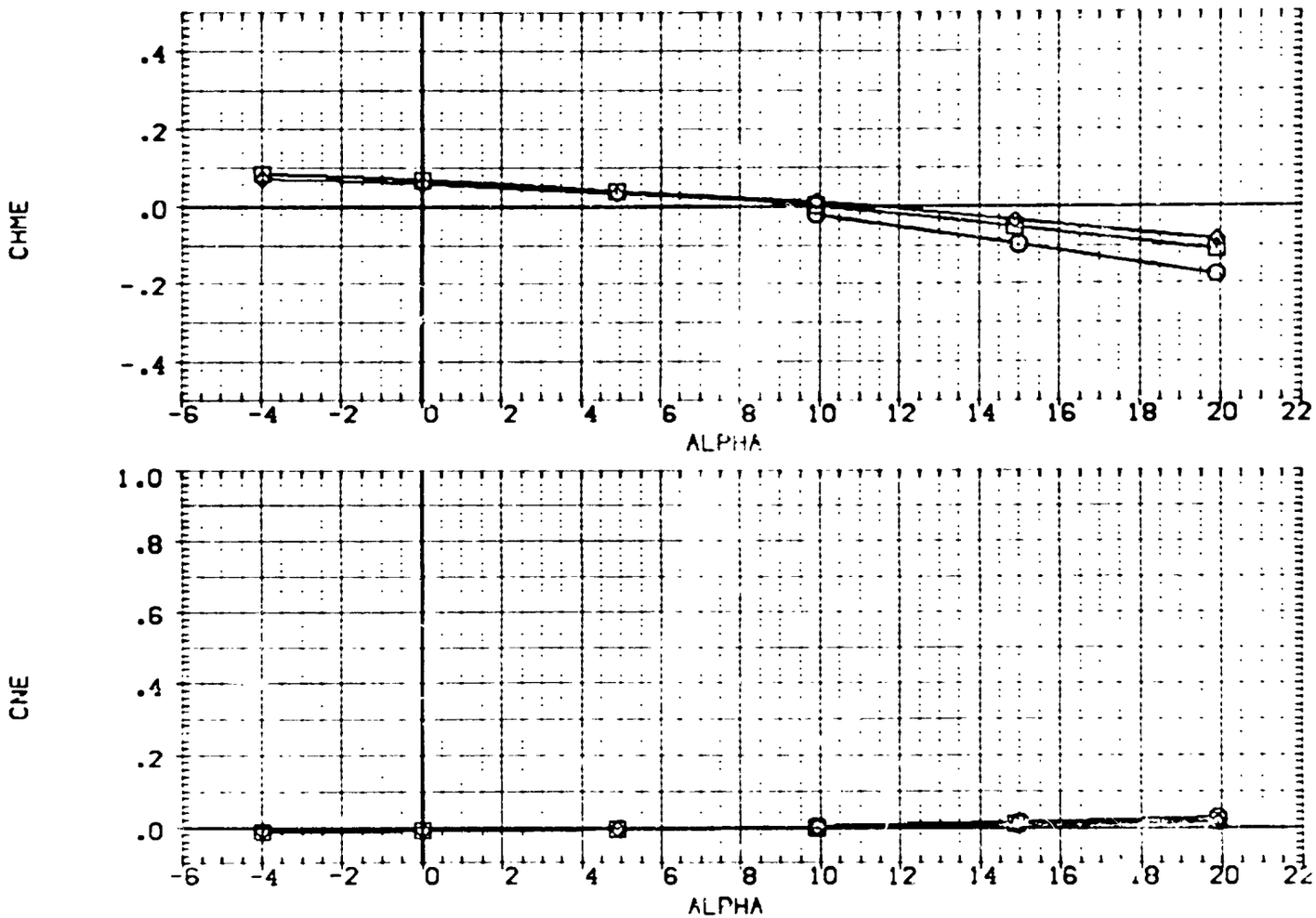


FIG. 14 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J42 AT NOZZLE EXIT PR OF 1.0

(A)MACH = .16

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BL[illegible]	REFERENCE INFORMATION		
(RDVA63)	□	0A57B	(NAAL 713)	B16 C5 F1	J42	V87 E18		.000	.039	1.300	-18.000	SREF	4.4120	SQ.FT.
(RDVA65)	□	0A57B	(NAAL 713)	B16 C5 F1	J42	V87 E19		.000	.125	1.300	-18.000	CREF	19.2300	IN.
(RDVA6S)	◇	0A57B	(NAAL 713)	B16 C5 F1	J42	V87 E18		.000	.286	1.300	-18.000	BREF	37.9350	IN
												XMRP	43.5990	IN.
												YMRP	.0000	IN
												ZMRP	-.4050	IN.
												SCALE	.0405	

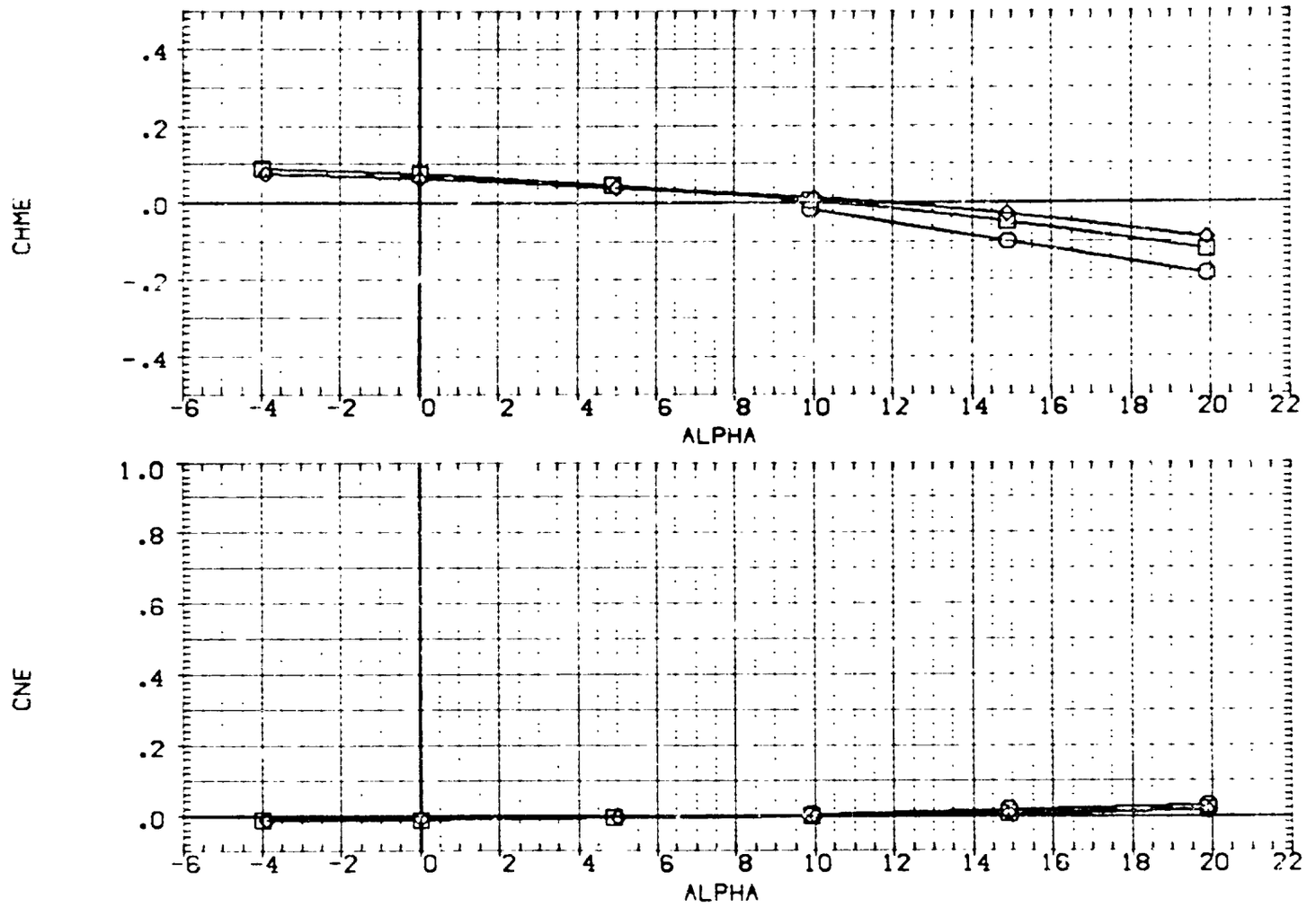


FIG. 15 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J42 AT NOZZLE EXIT PR OF 1.3

(A)MACH = .16

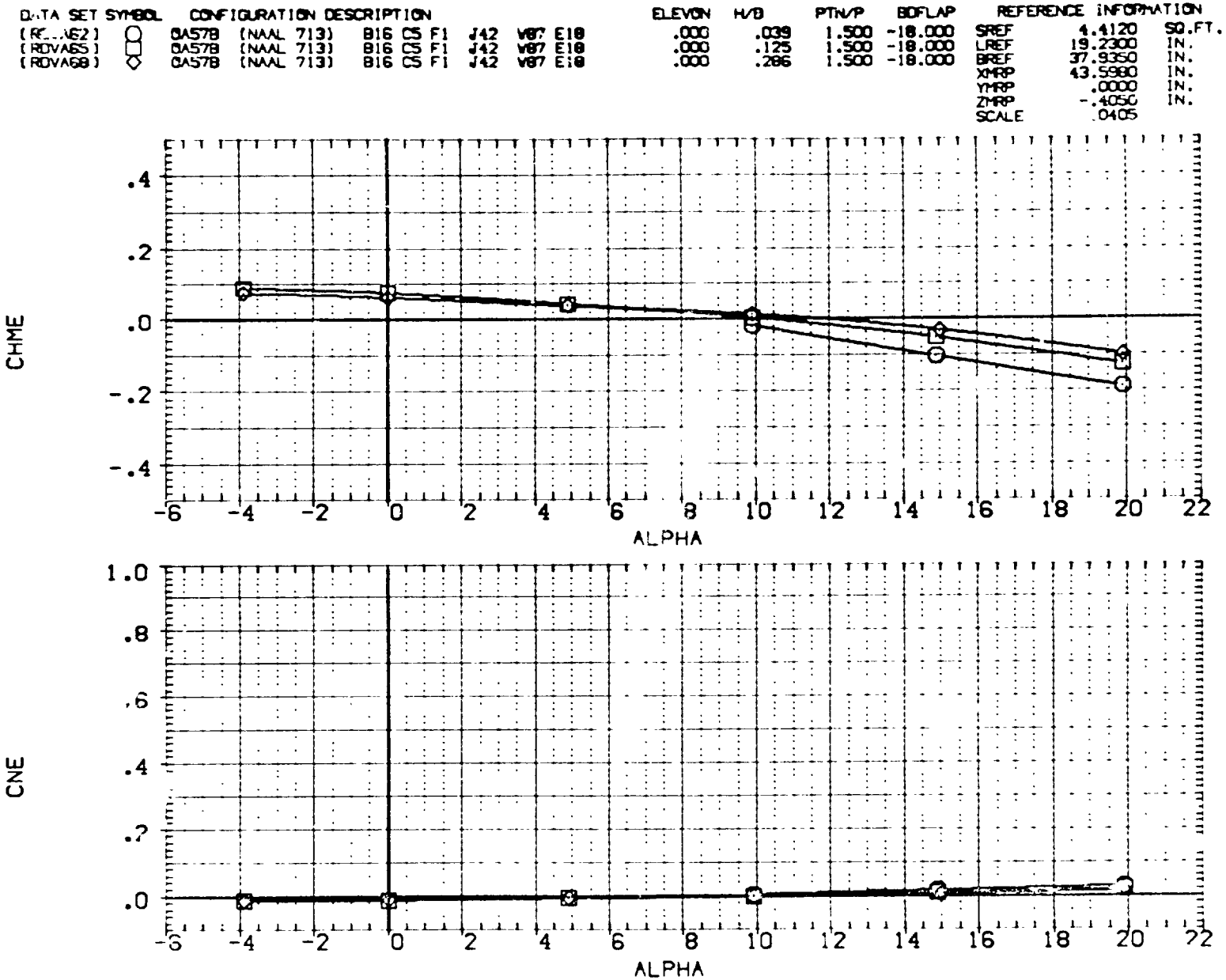


FIG. 16 ELEVON HINGE MOMENT AND NORMAL FORCE WITH J42 AT NOZZLE EXIT PR OF 1.5

(A)MACH = .16

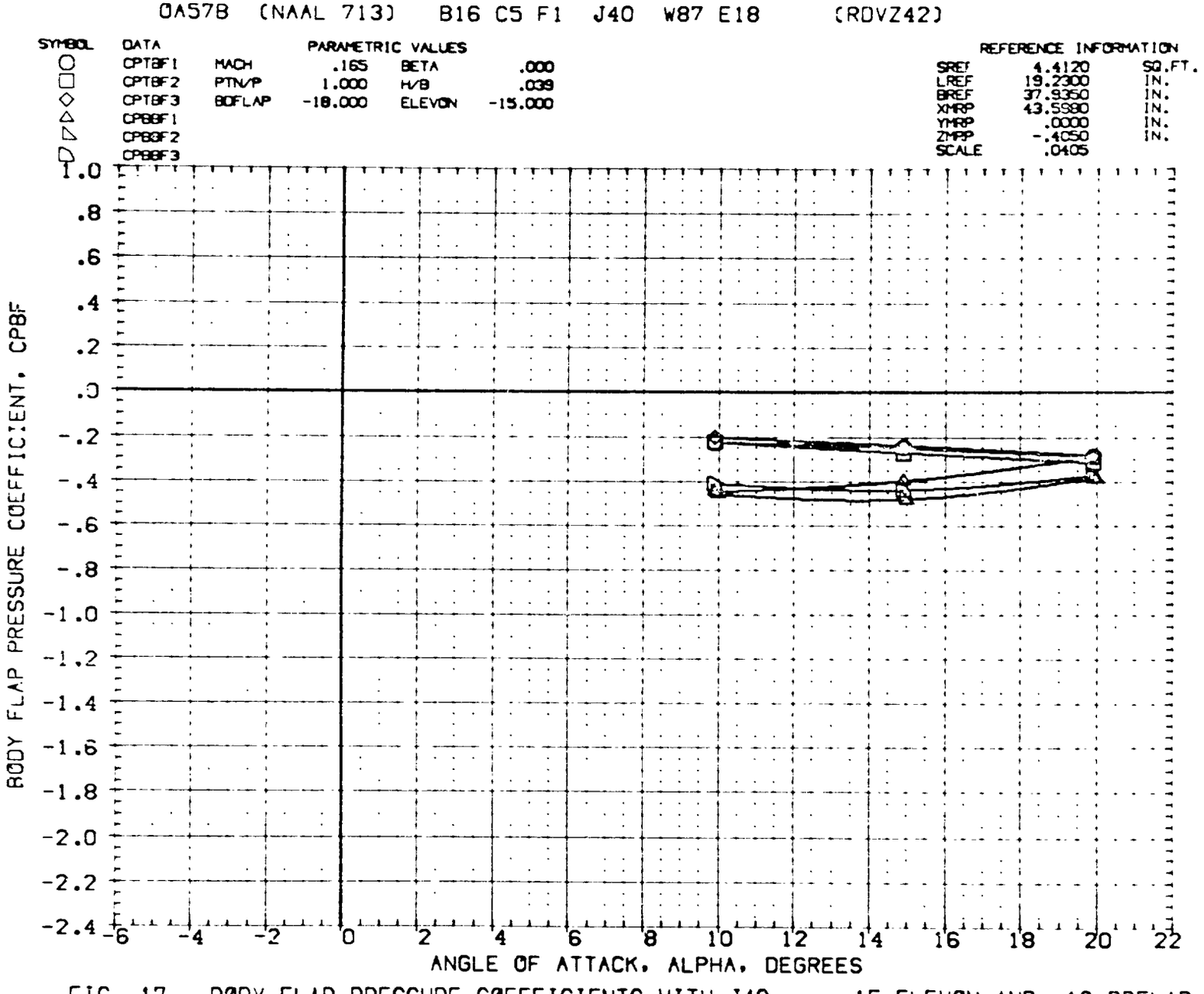


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

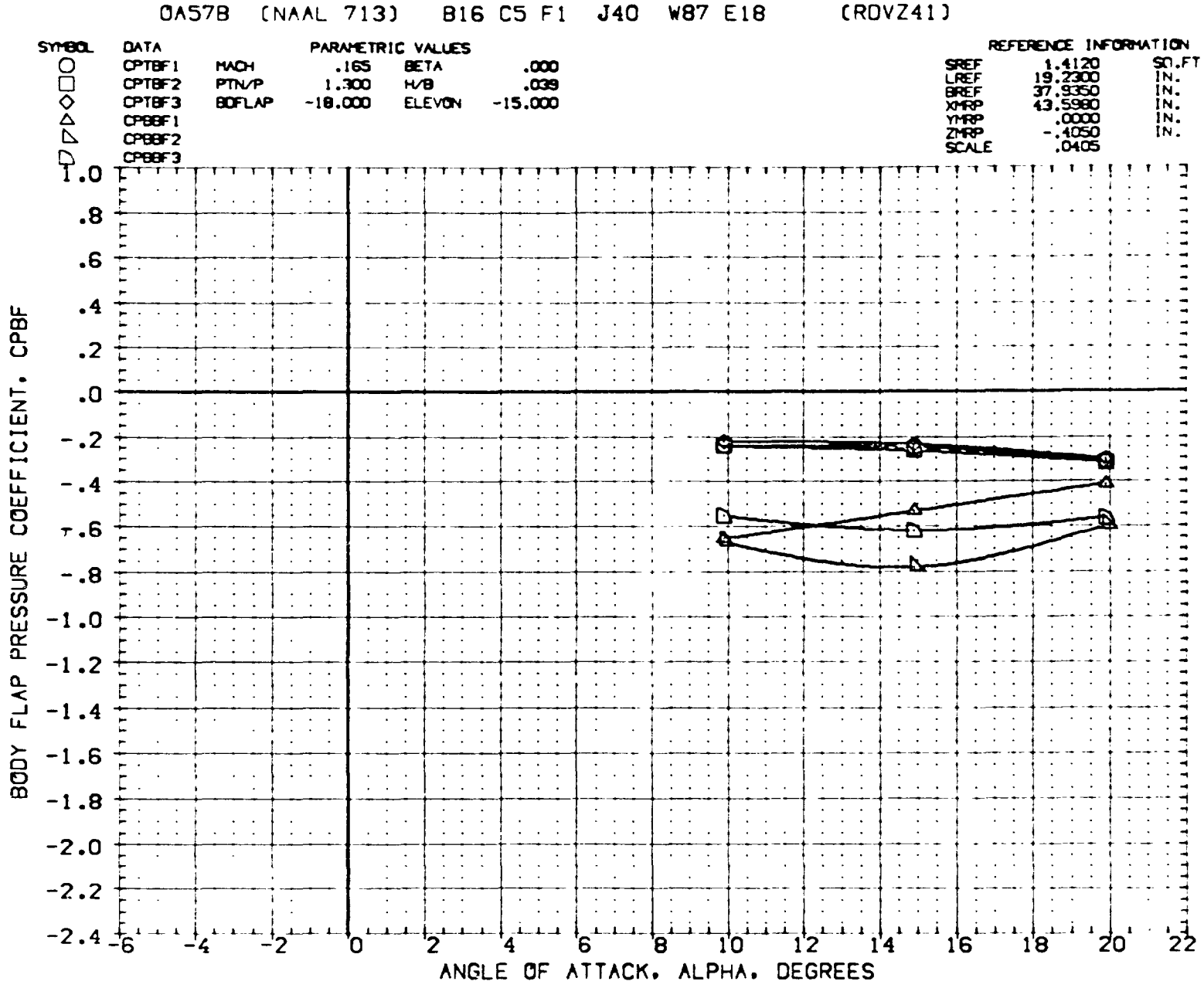


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

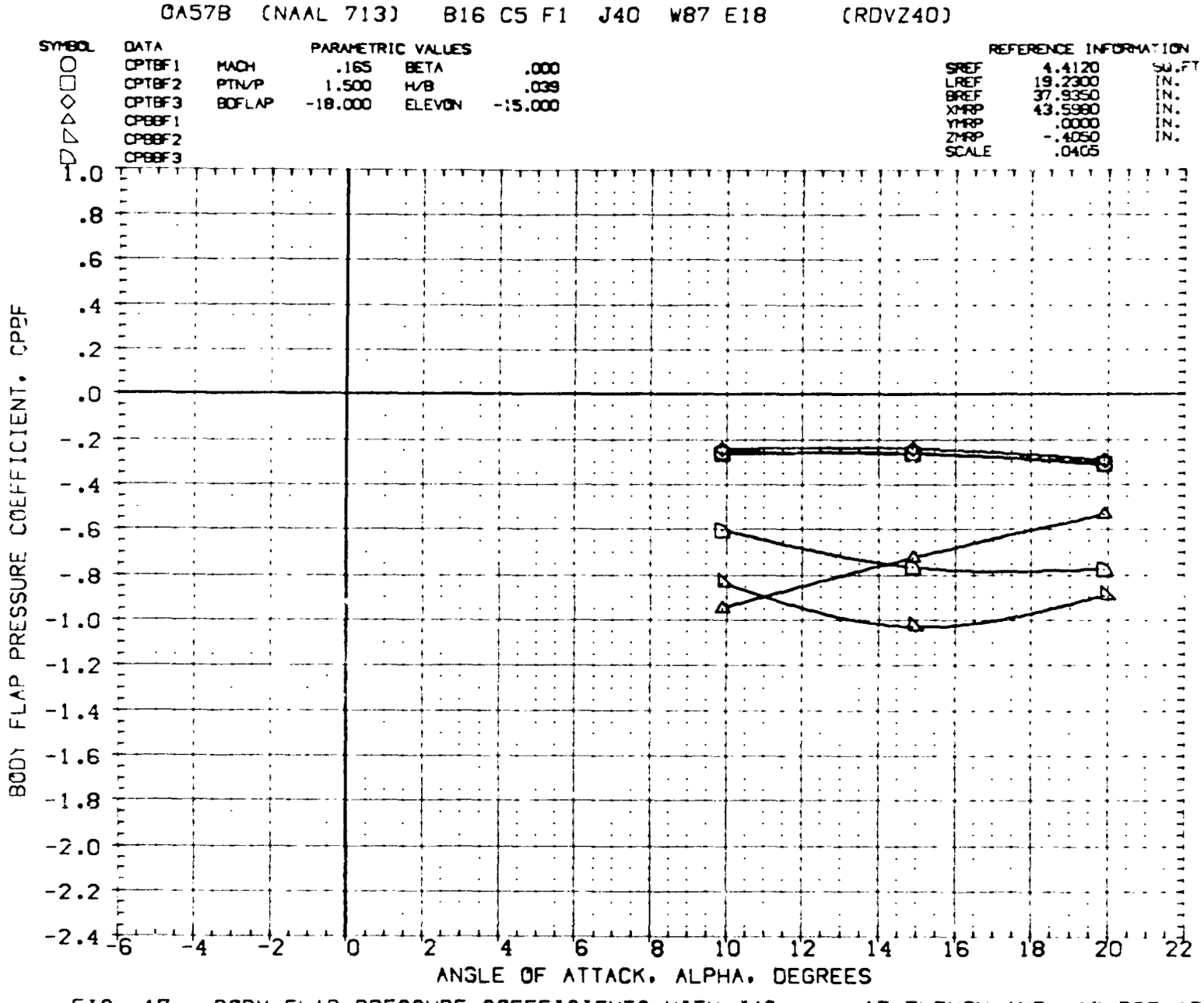


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

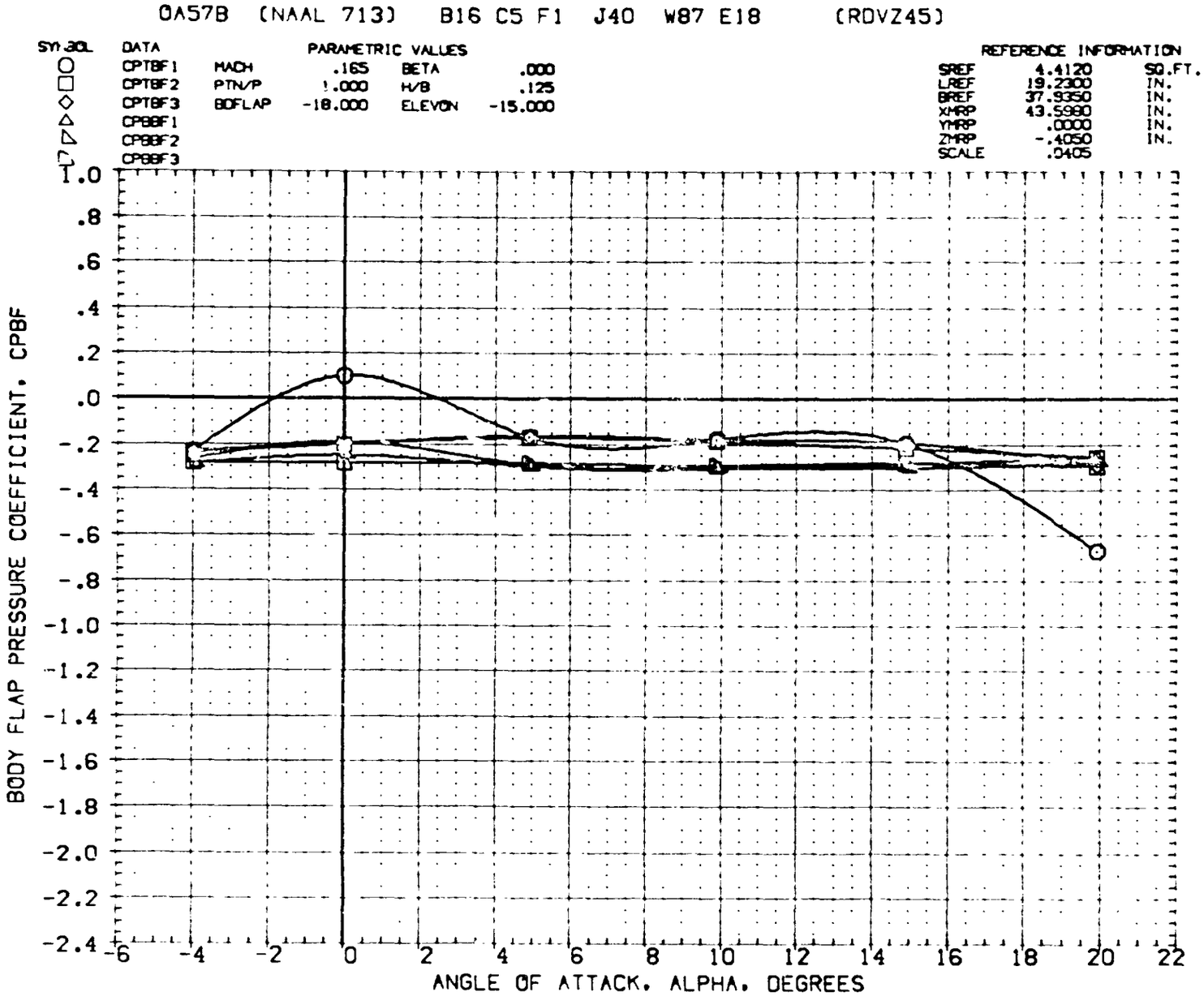


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

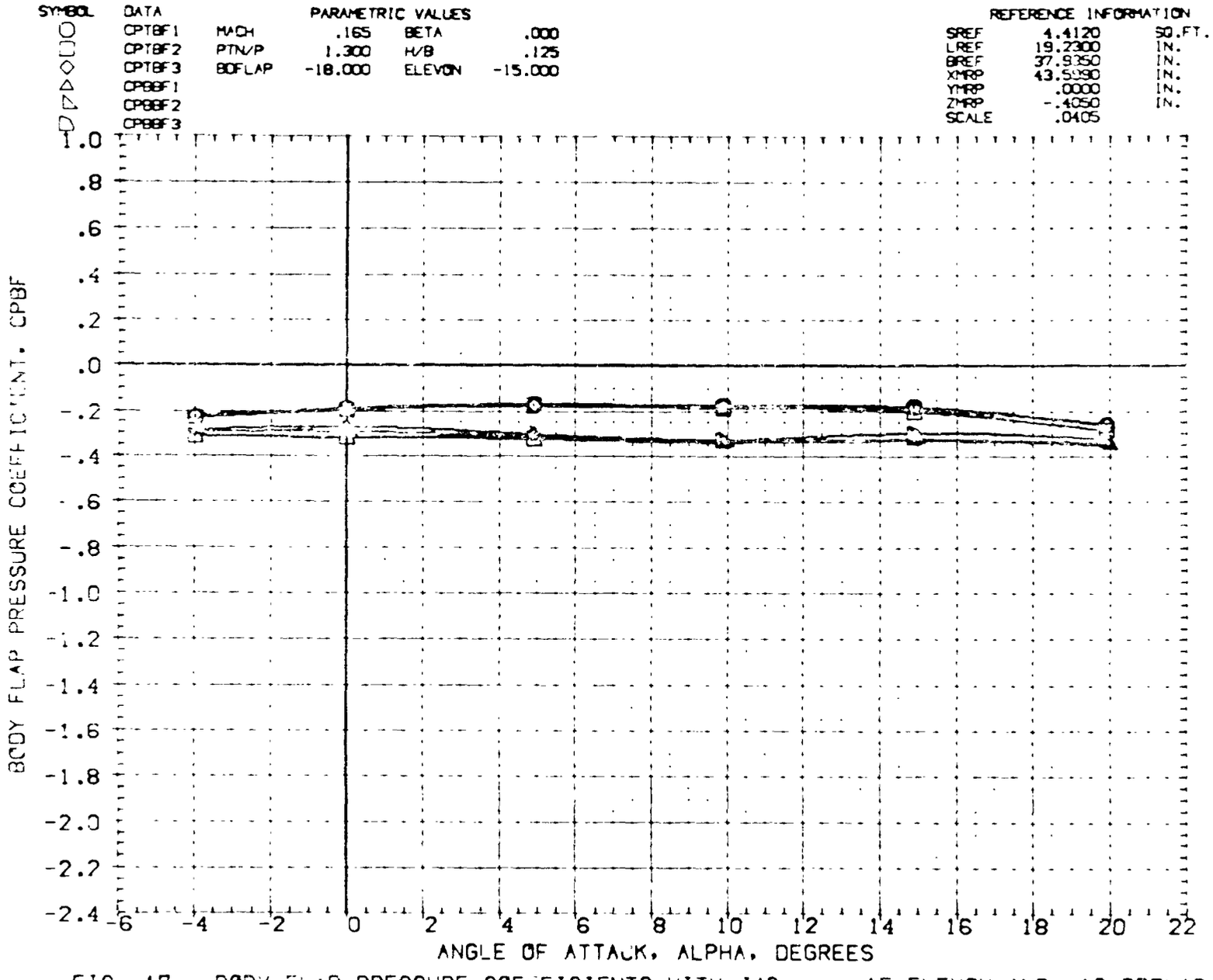


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

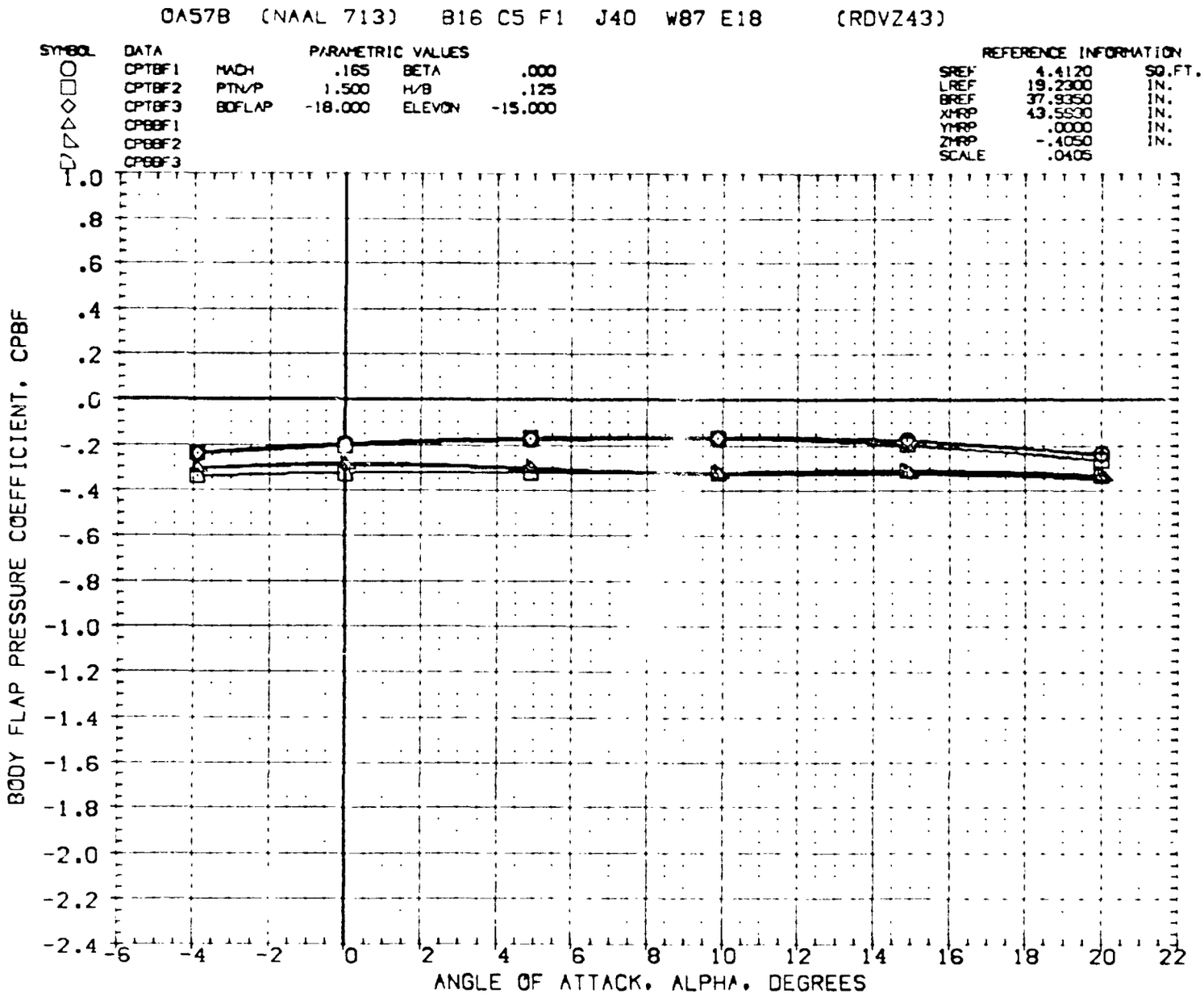


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

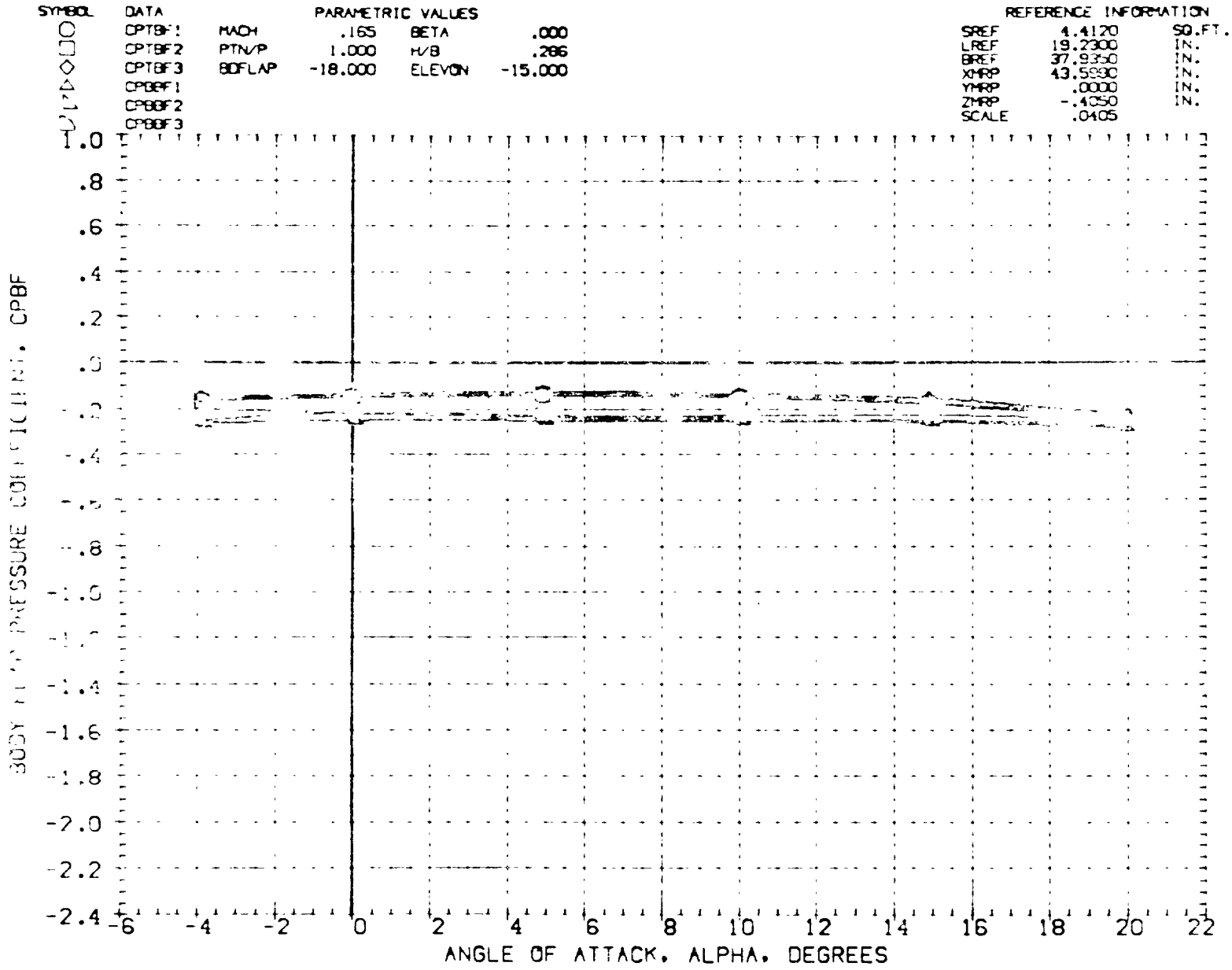


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

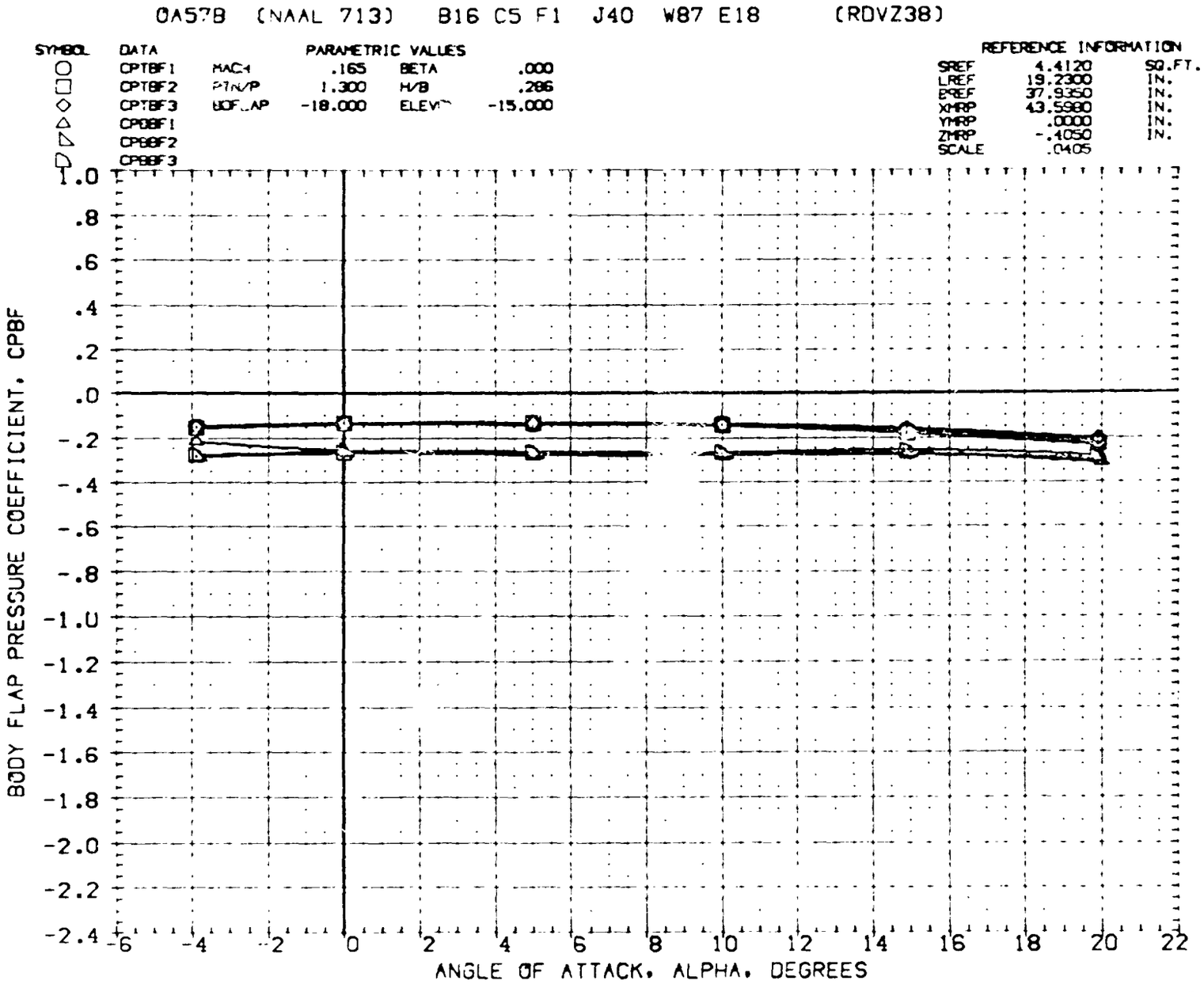


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

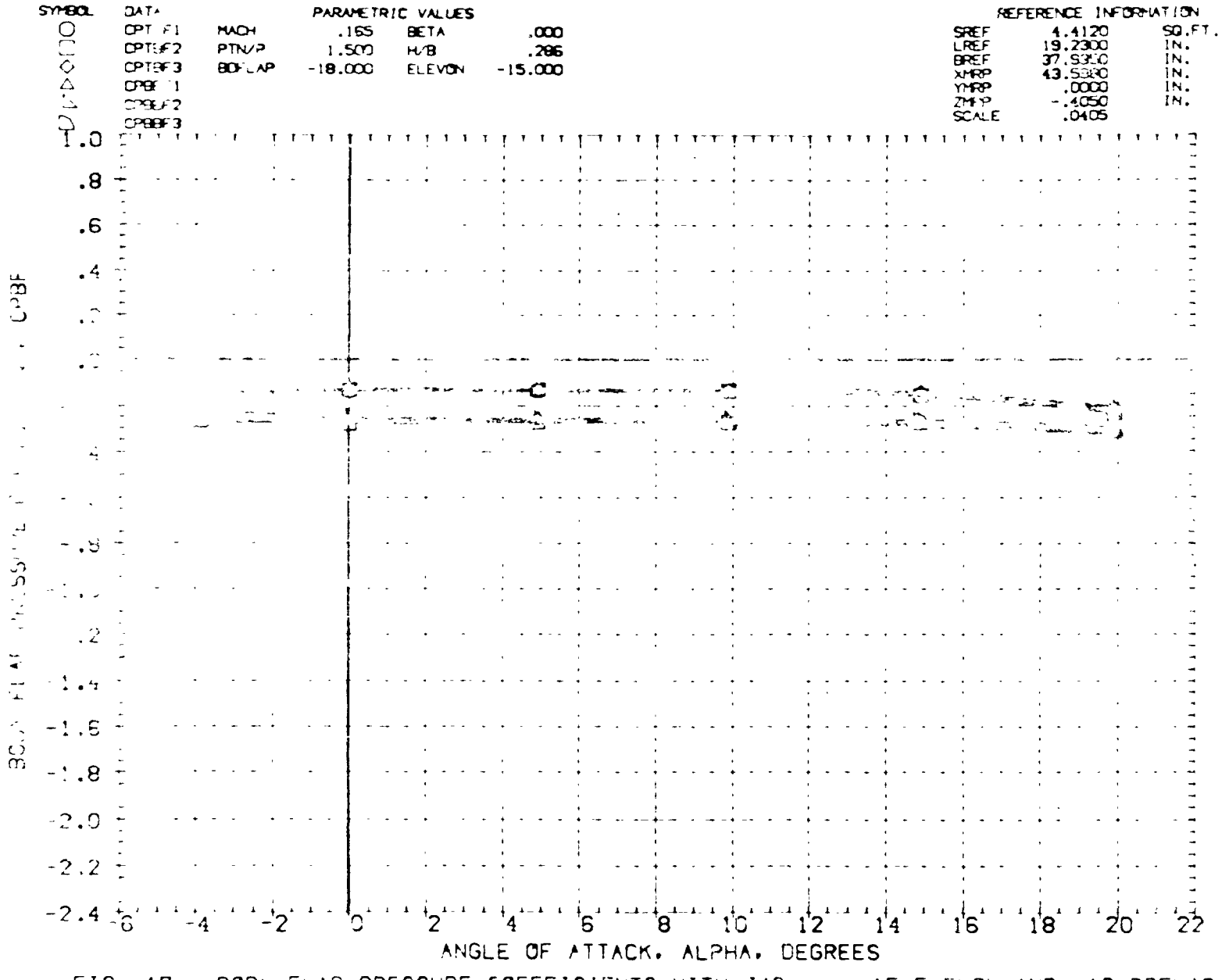


FIG. 17 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

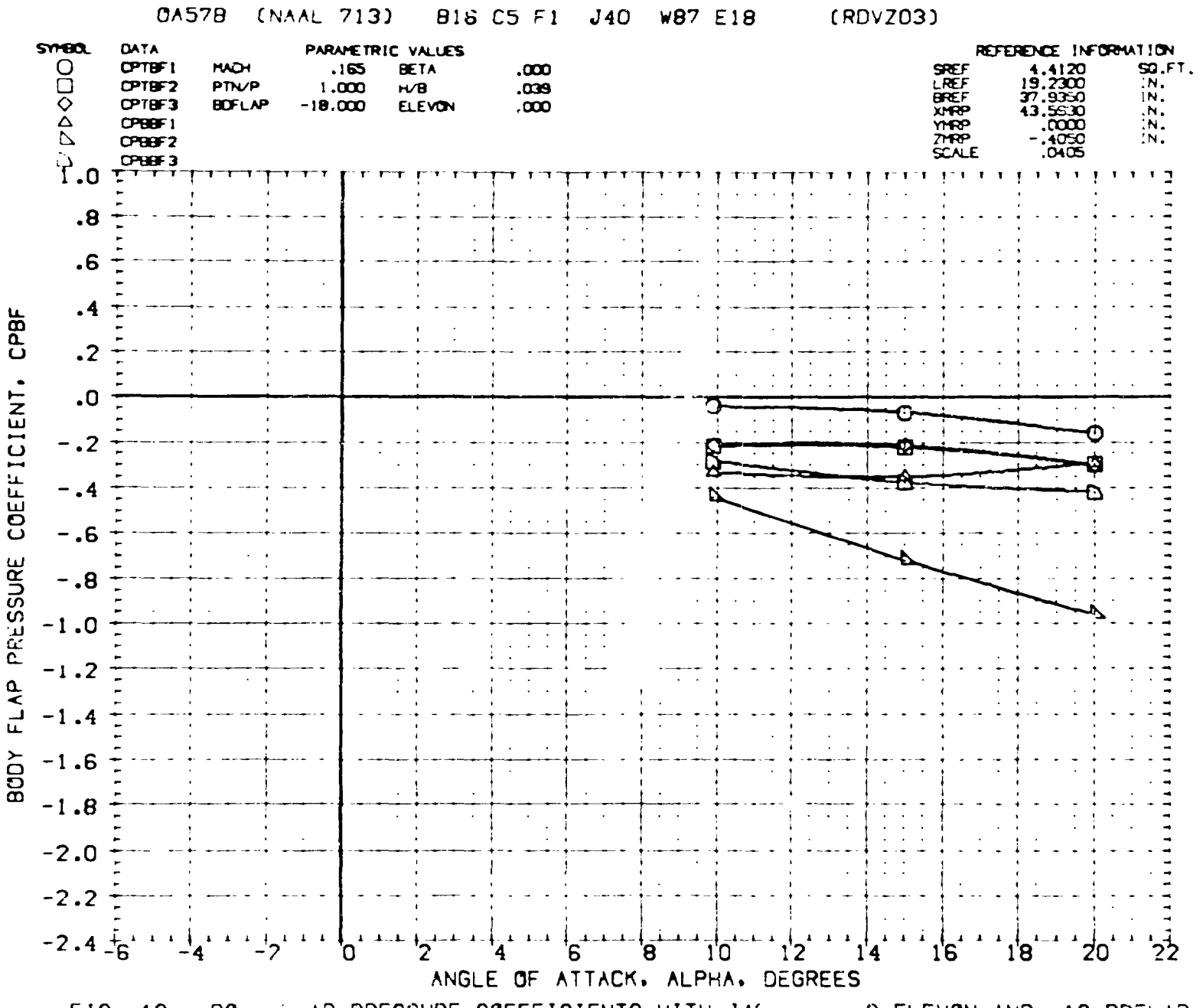


FIG. 18 BC AP PRESSURE COEFFICIENTS WITH J40 . 0 ELEVON AND -18 BDFLAP

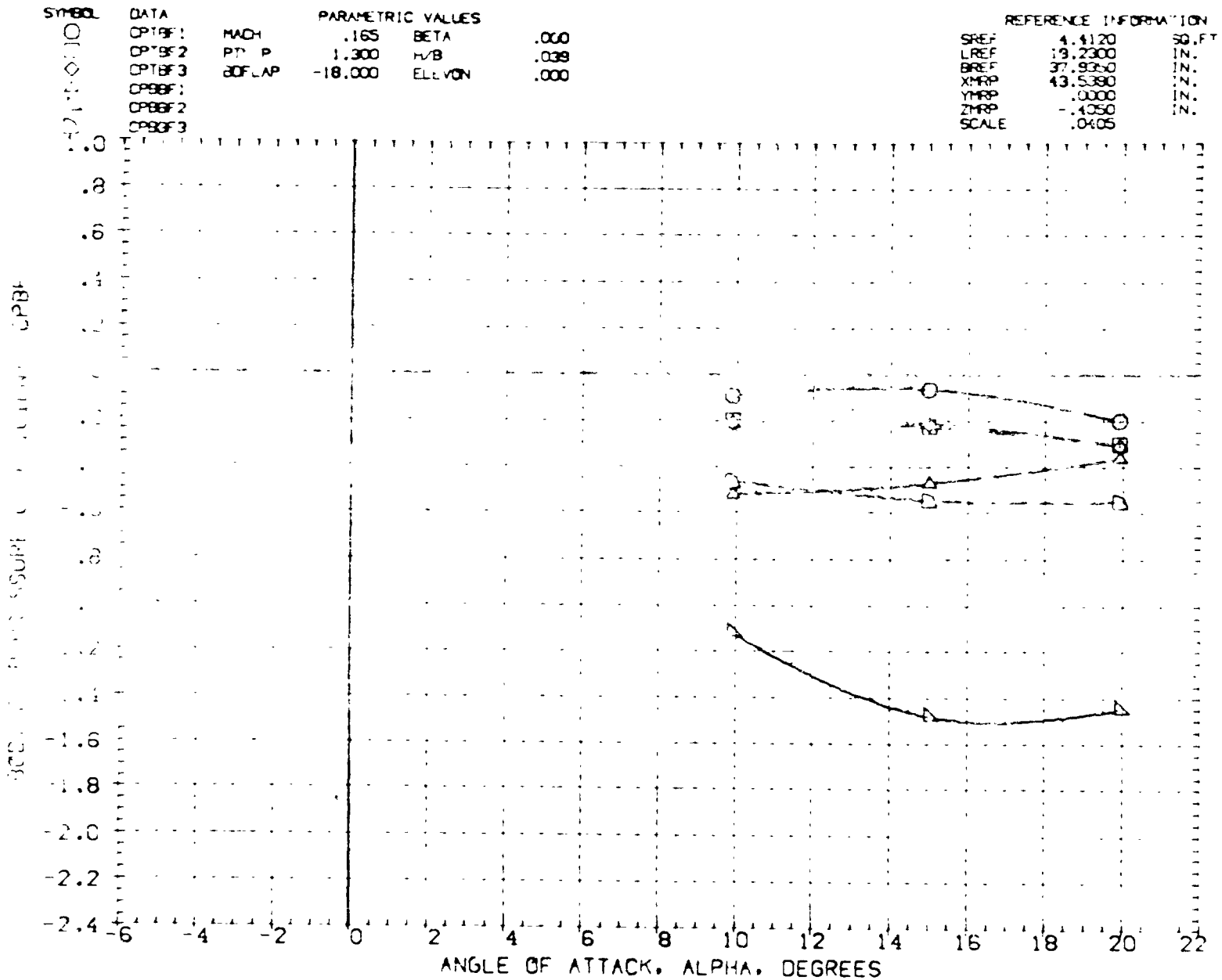


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

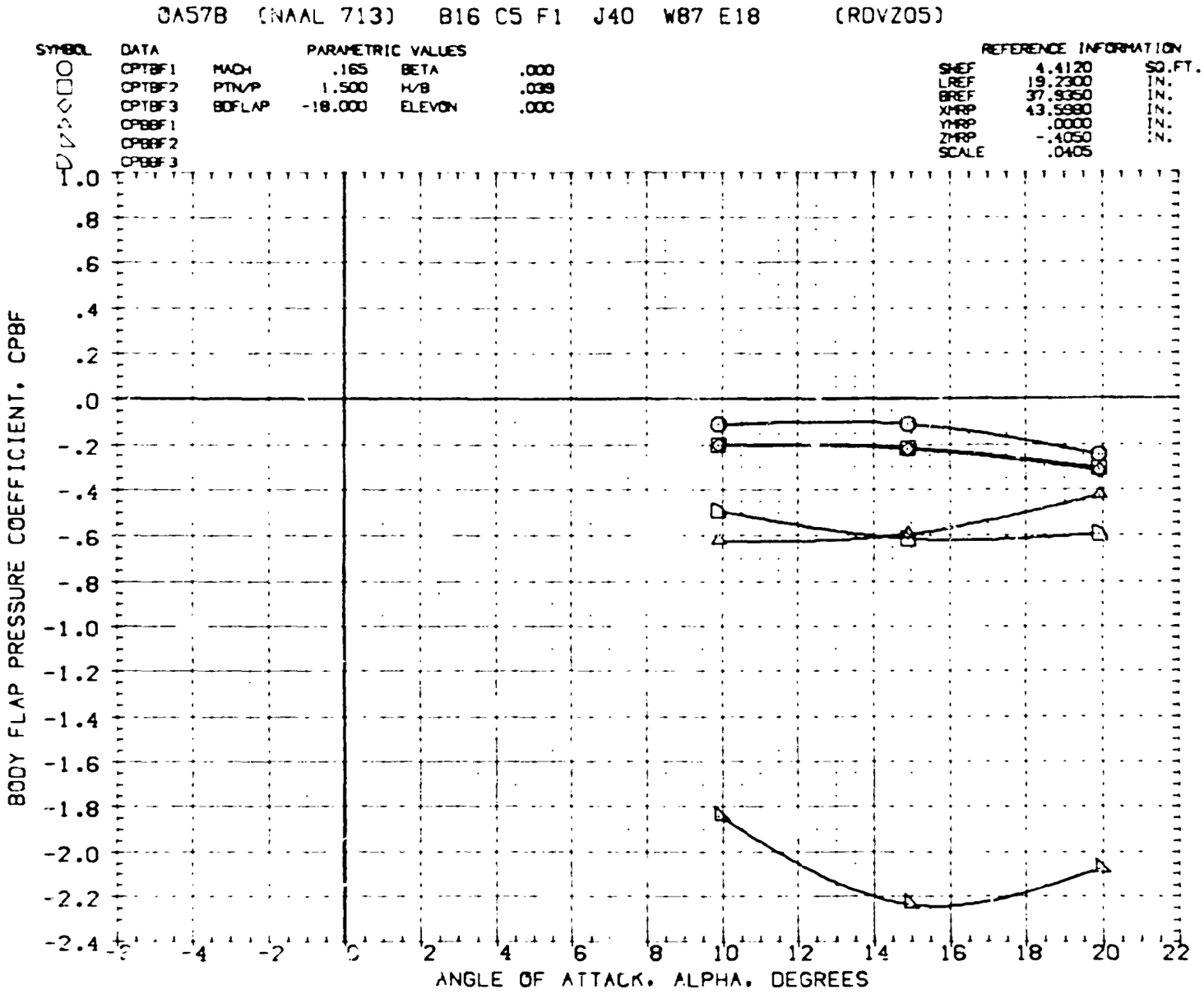


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

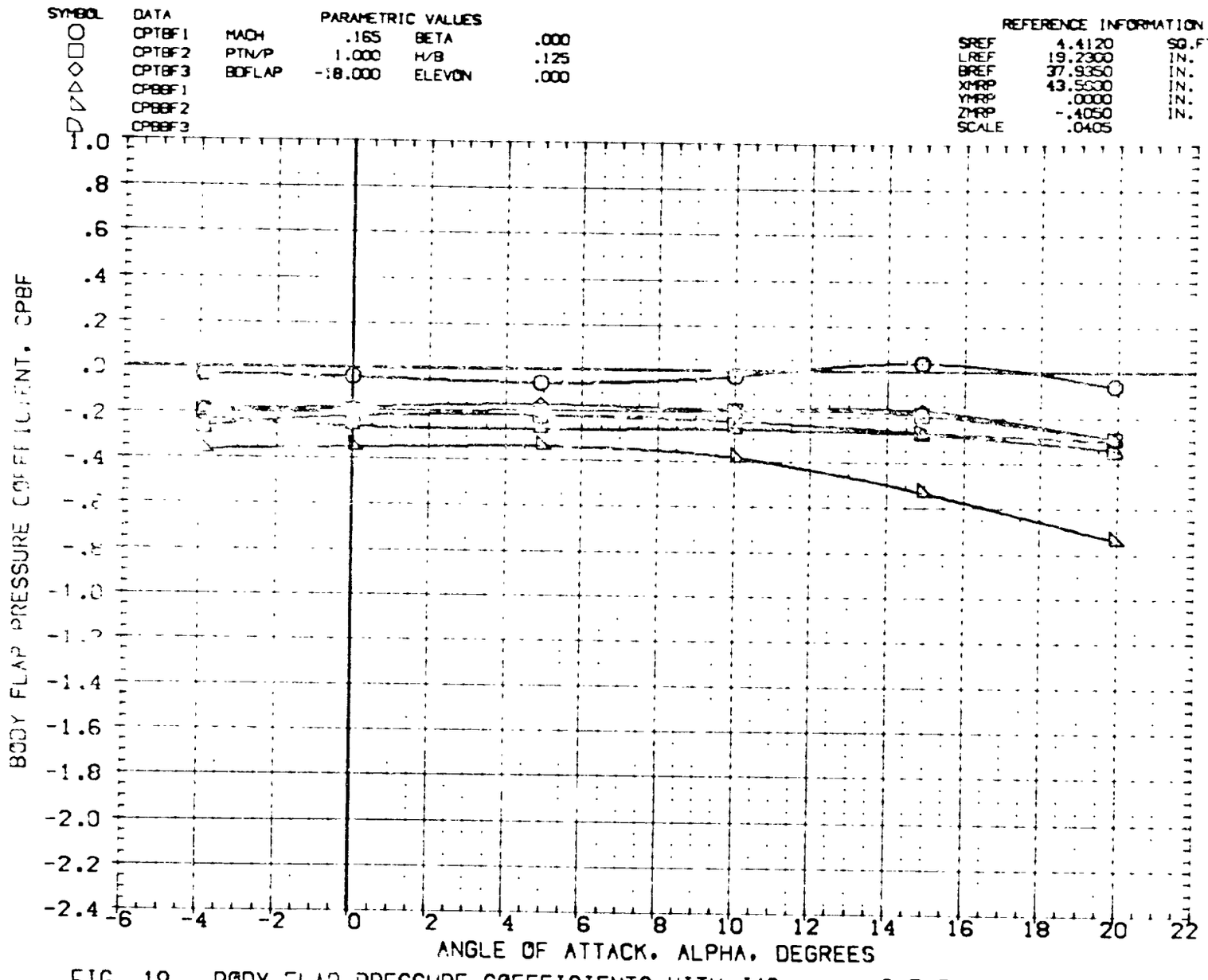


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

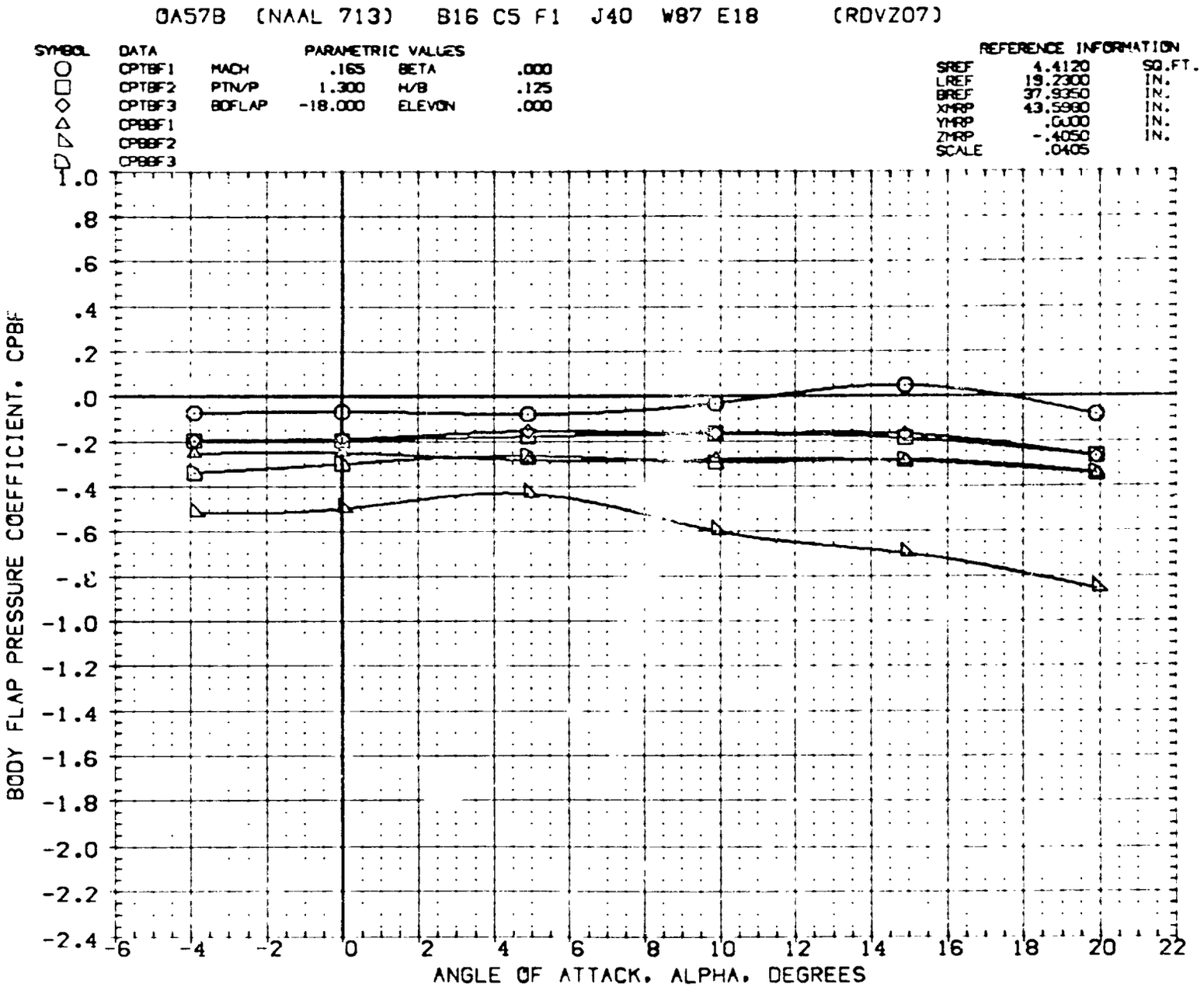


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

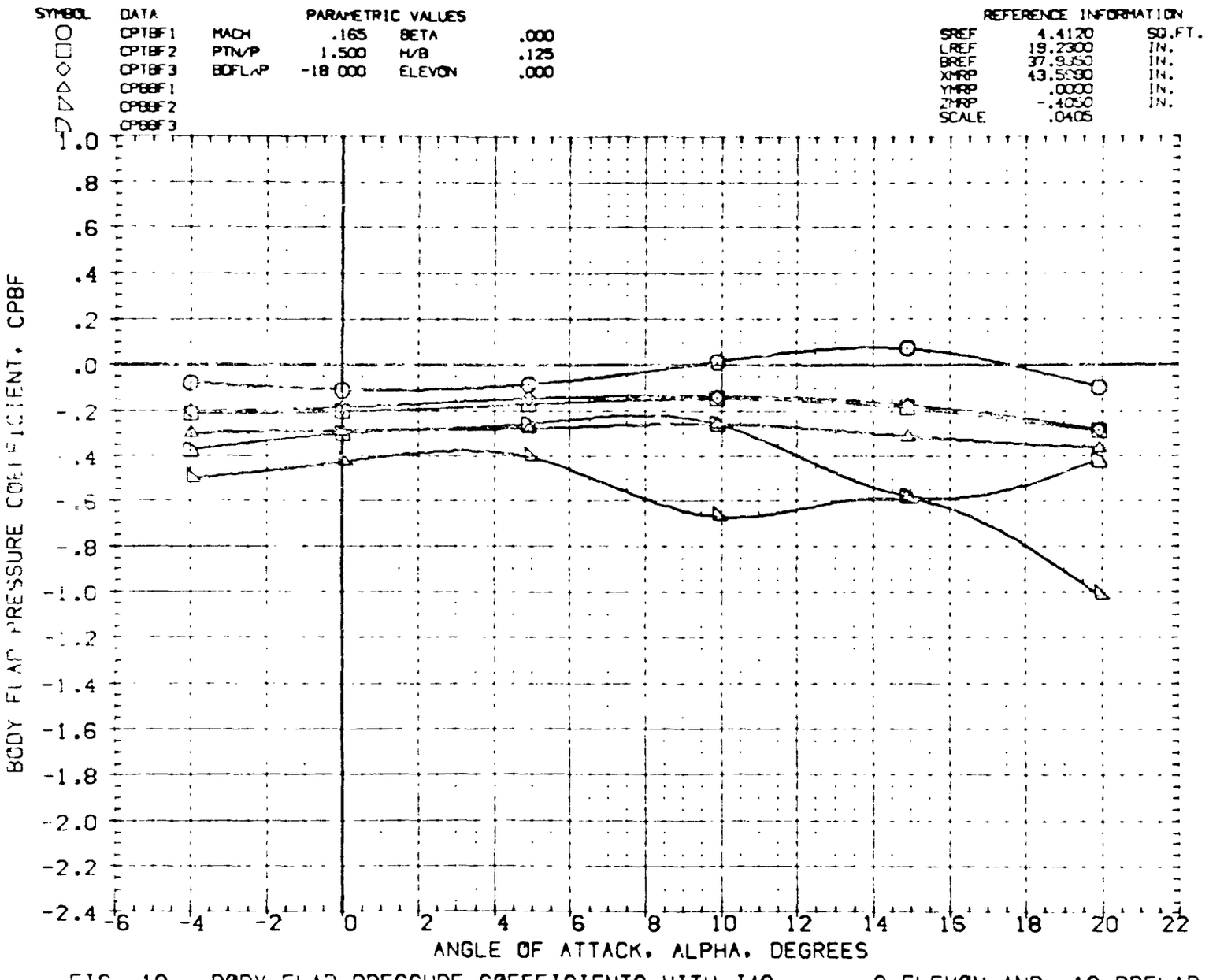


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

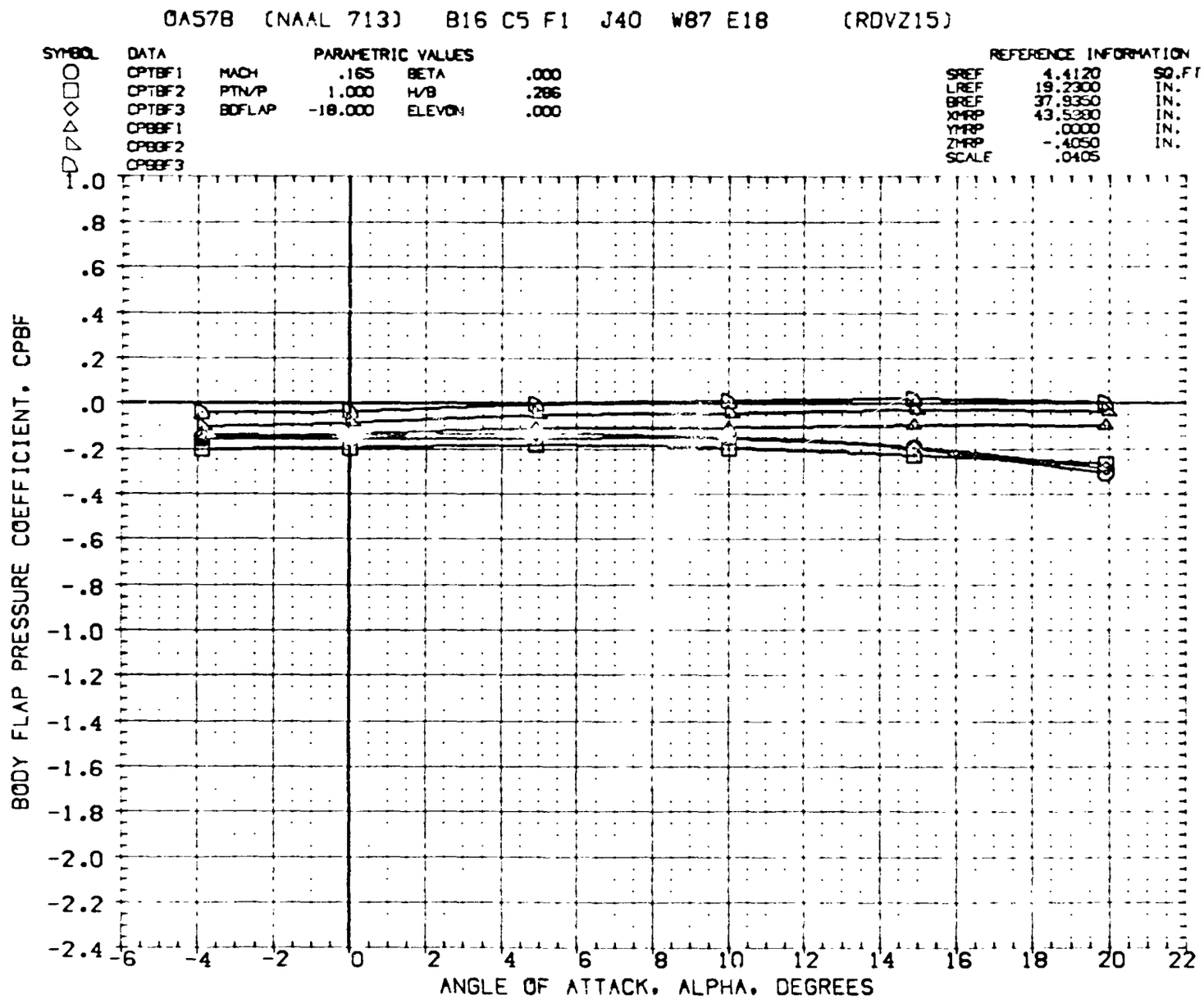


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

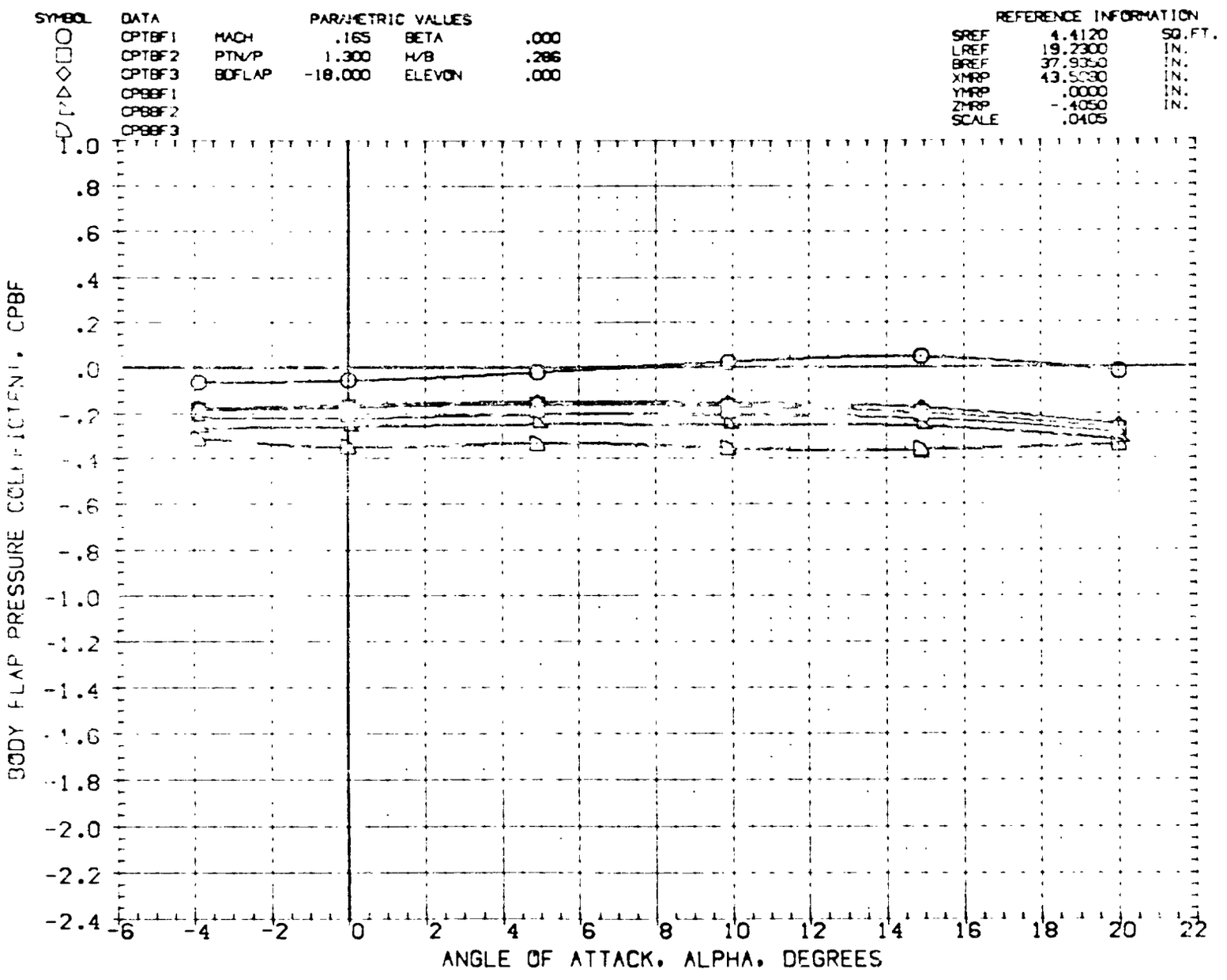


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

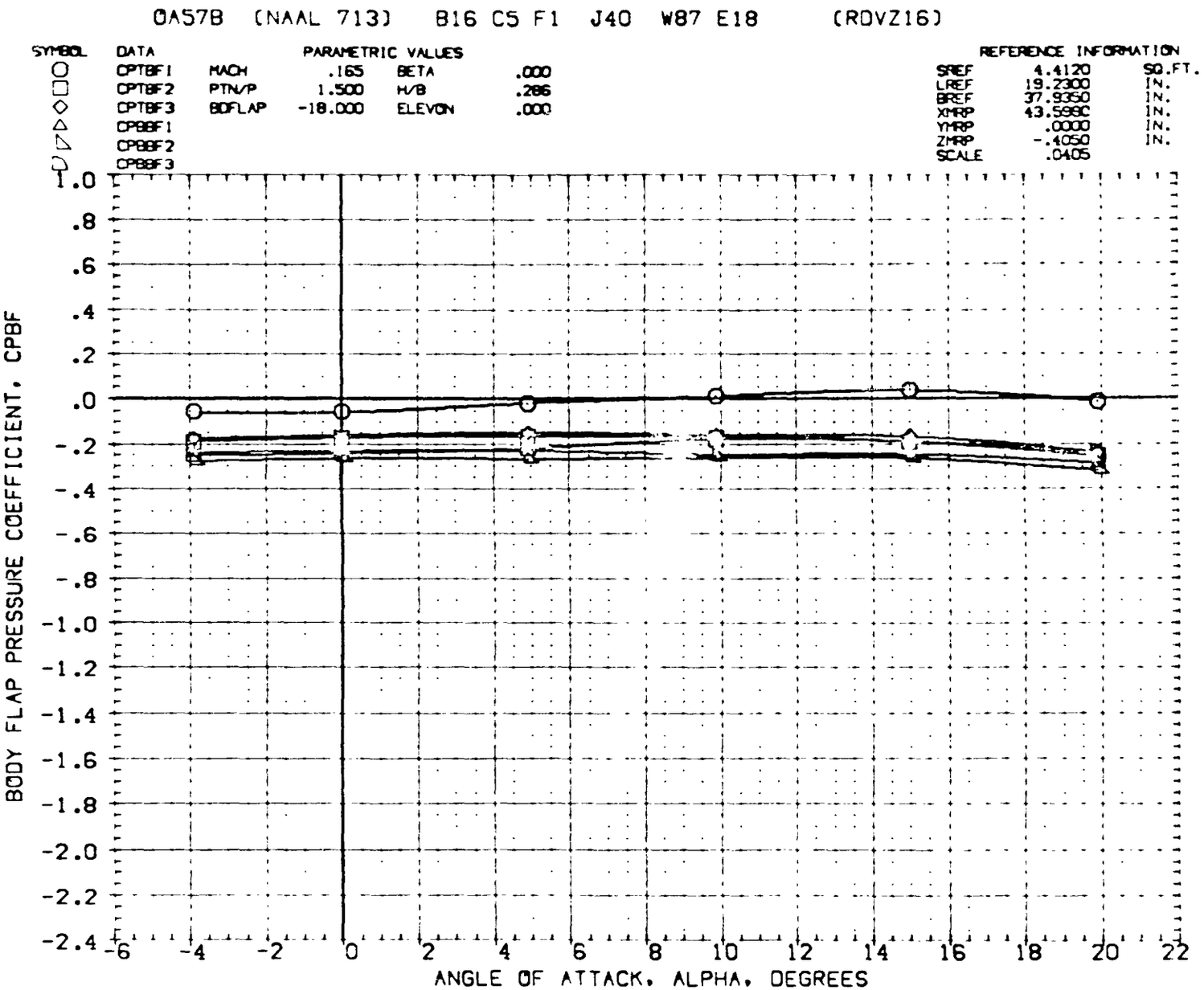


FIG. 18 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

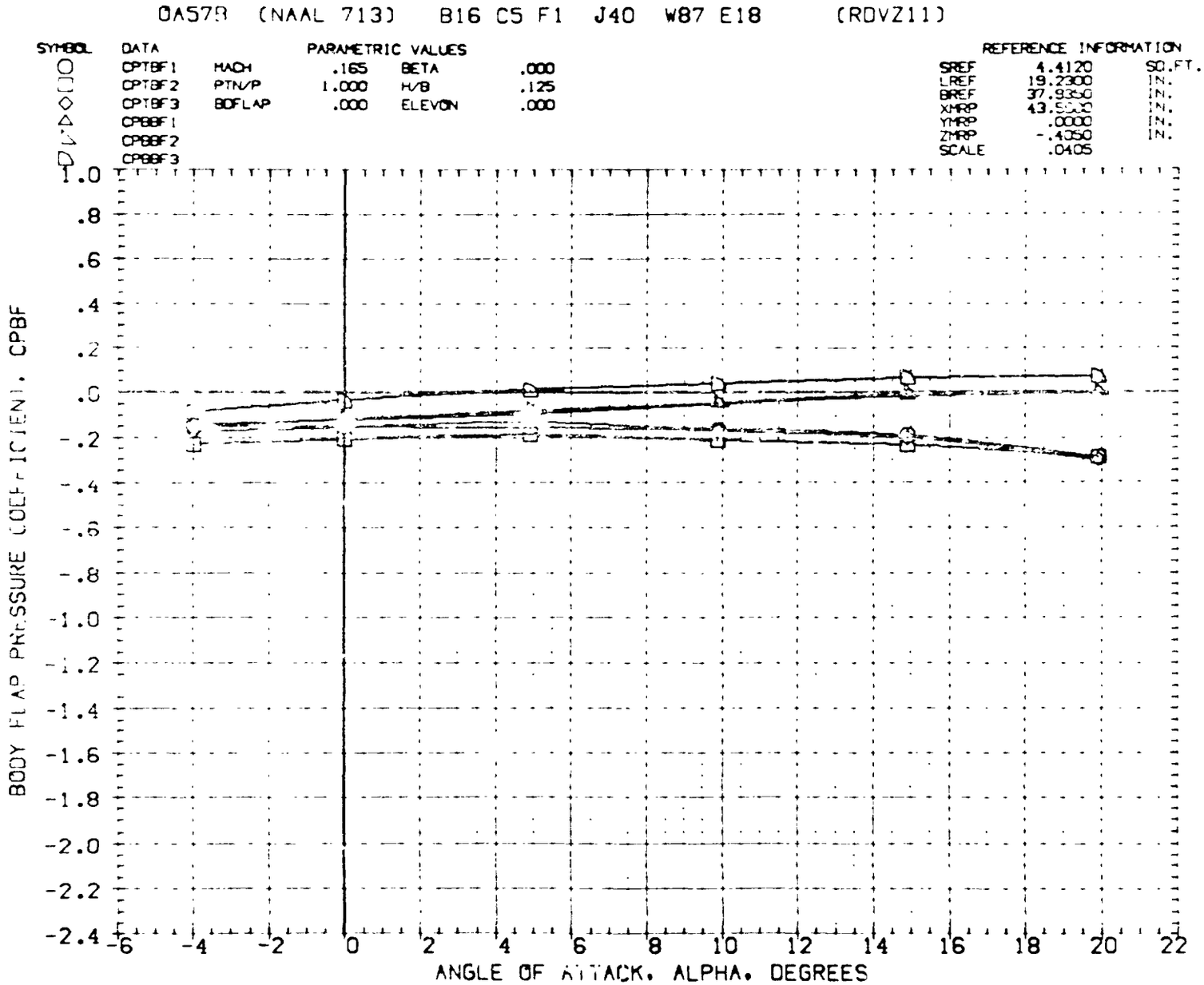


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

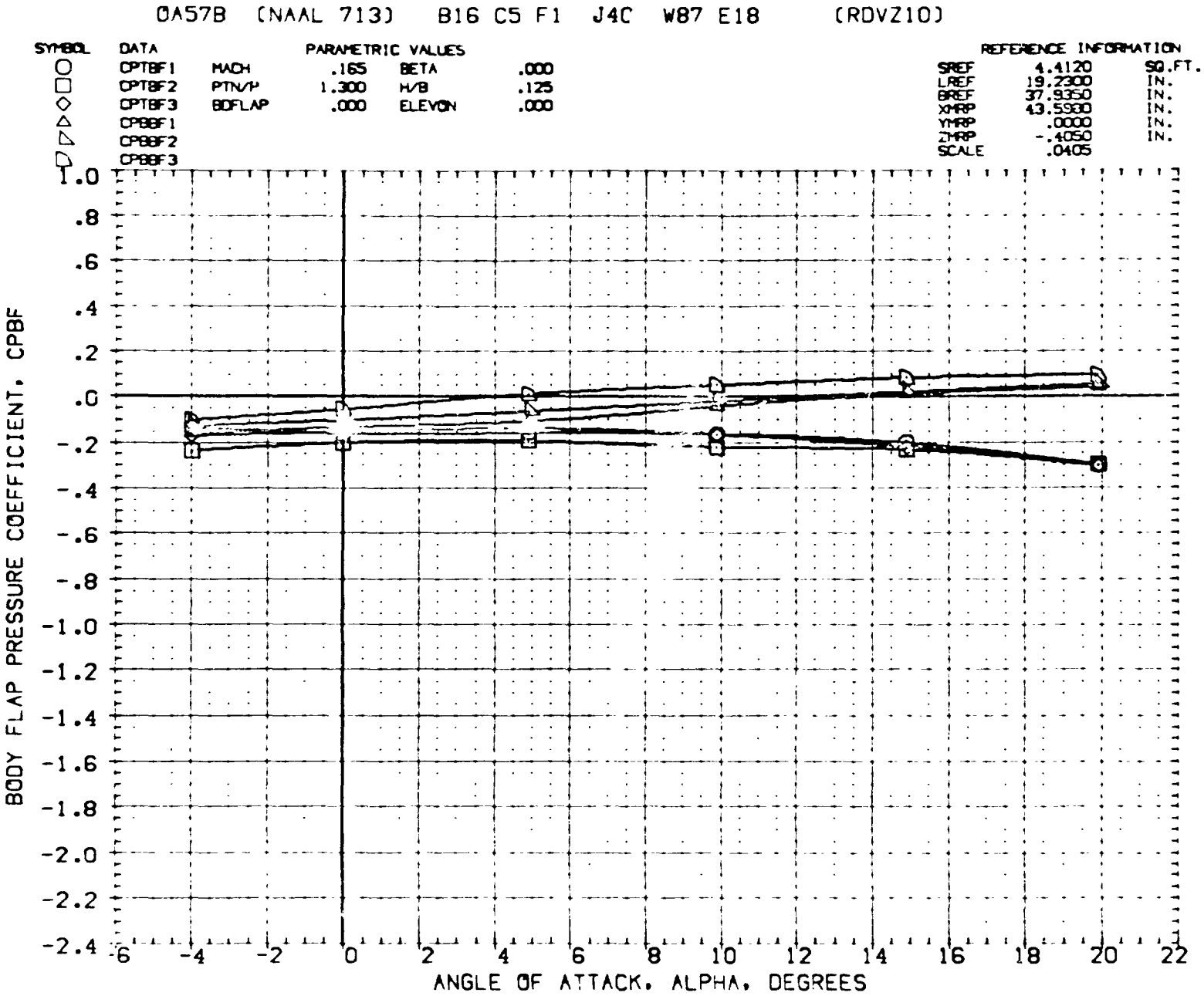


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

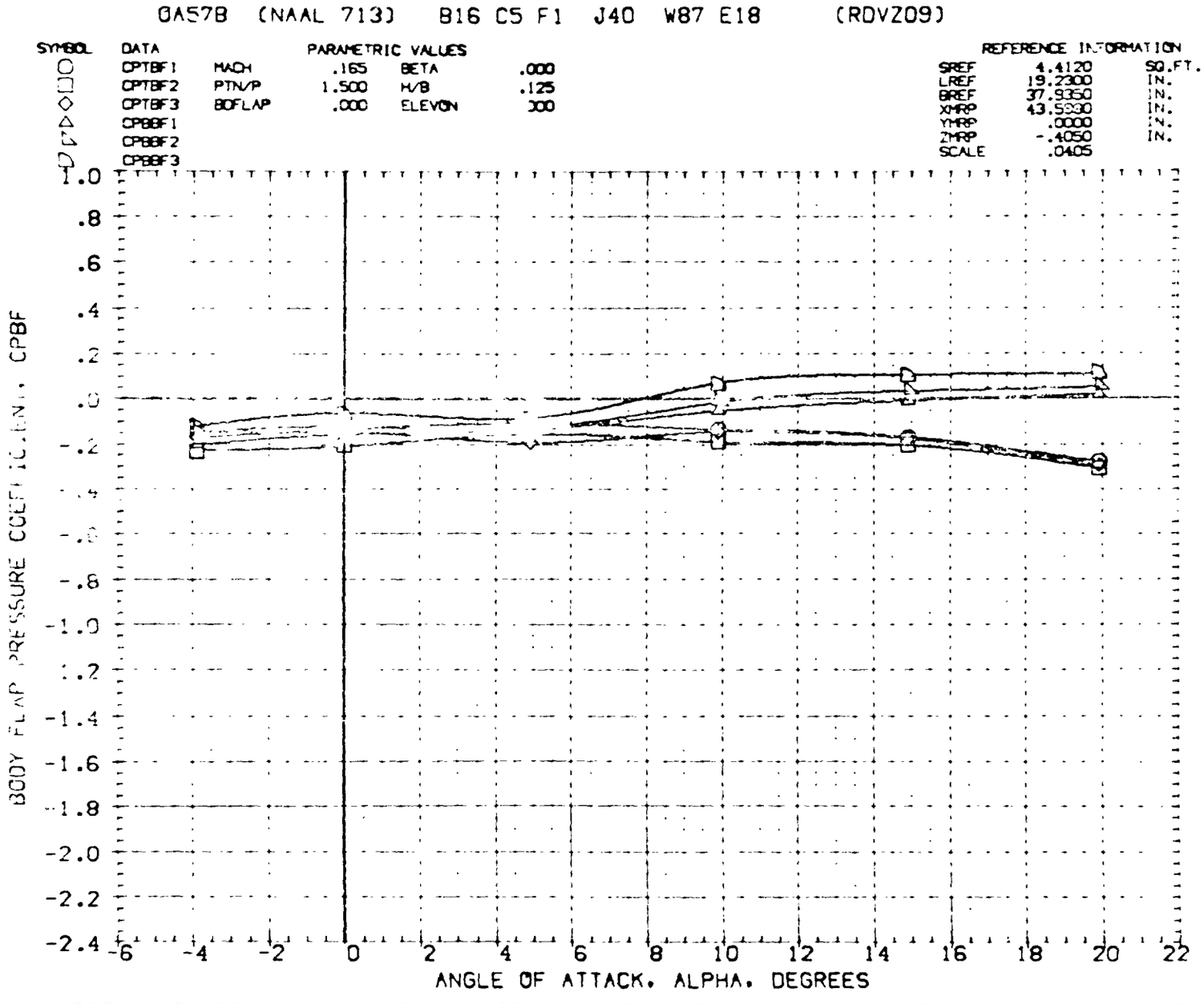


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

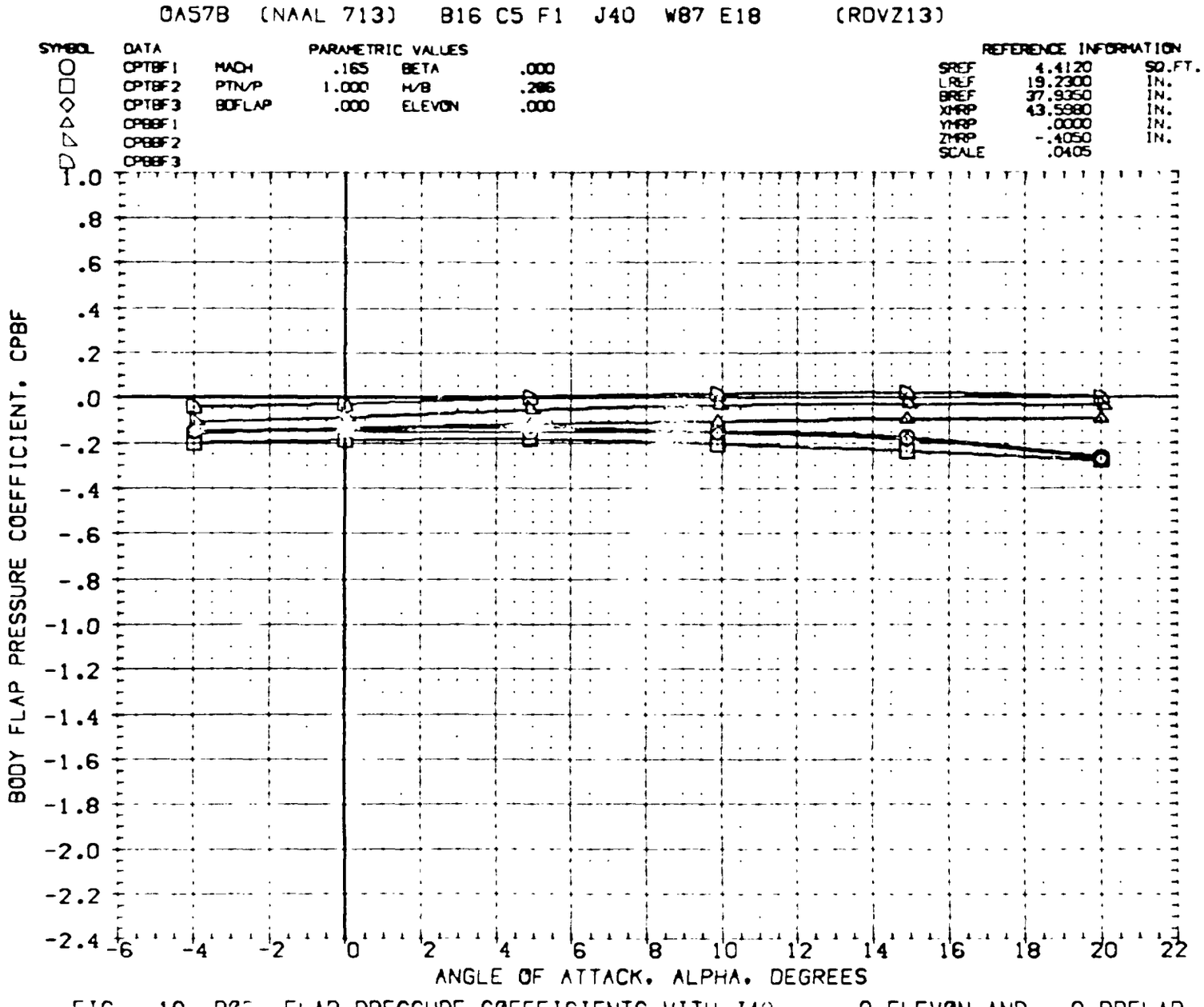


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

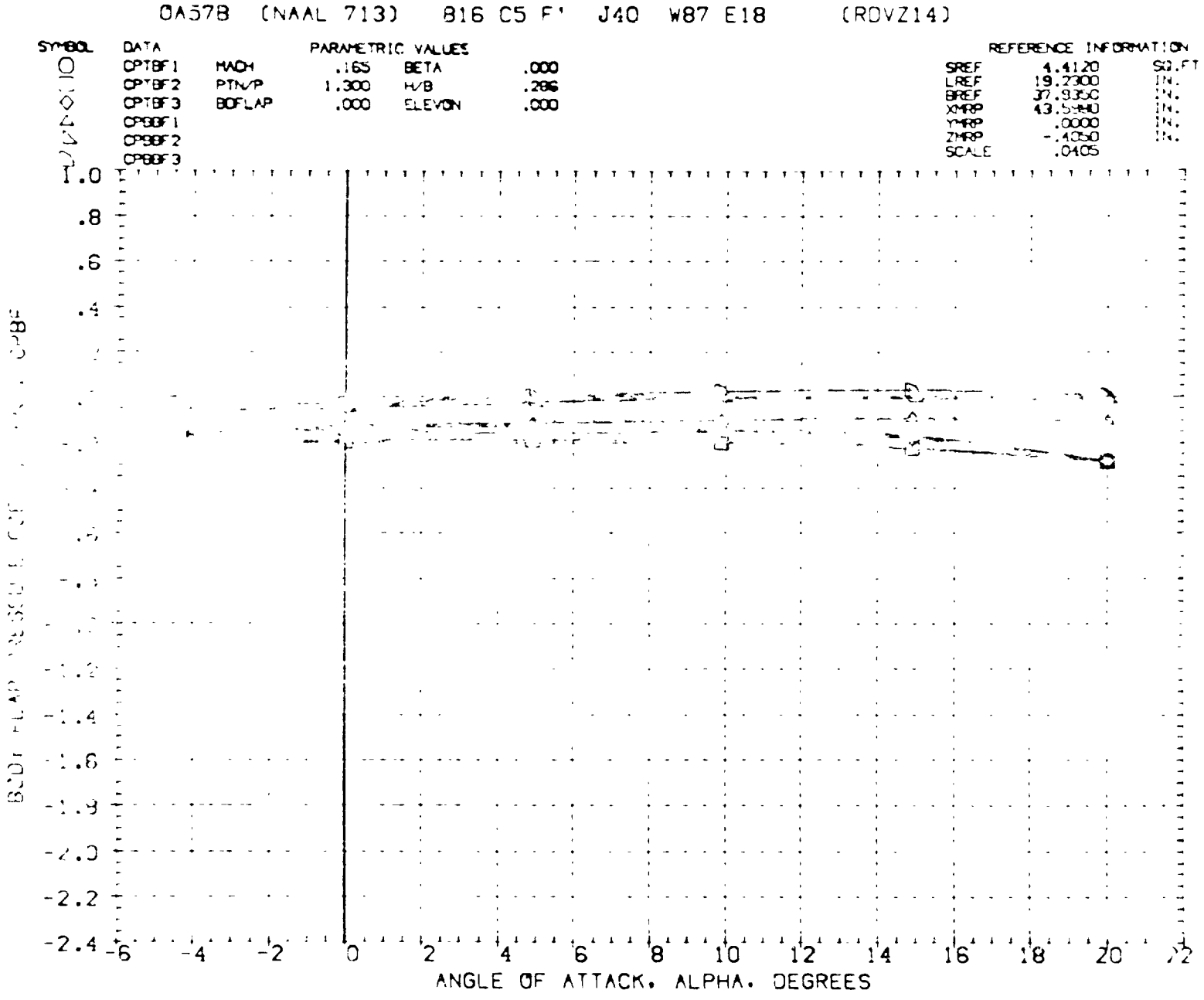


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON , BOFLAP

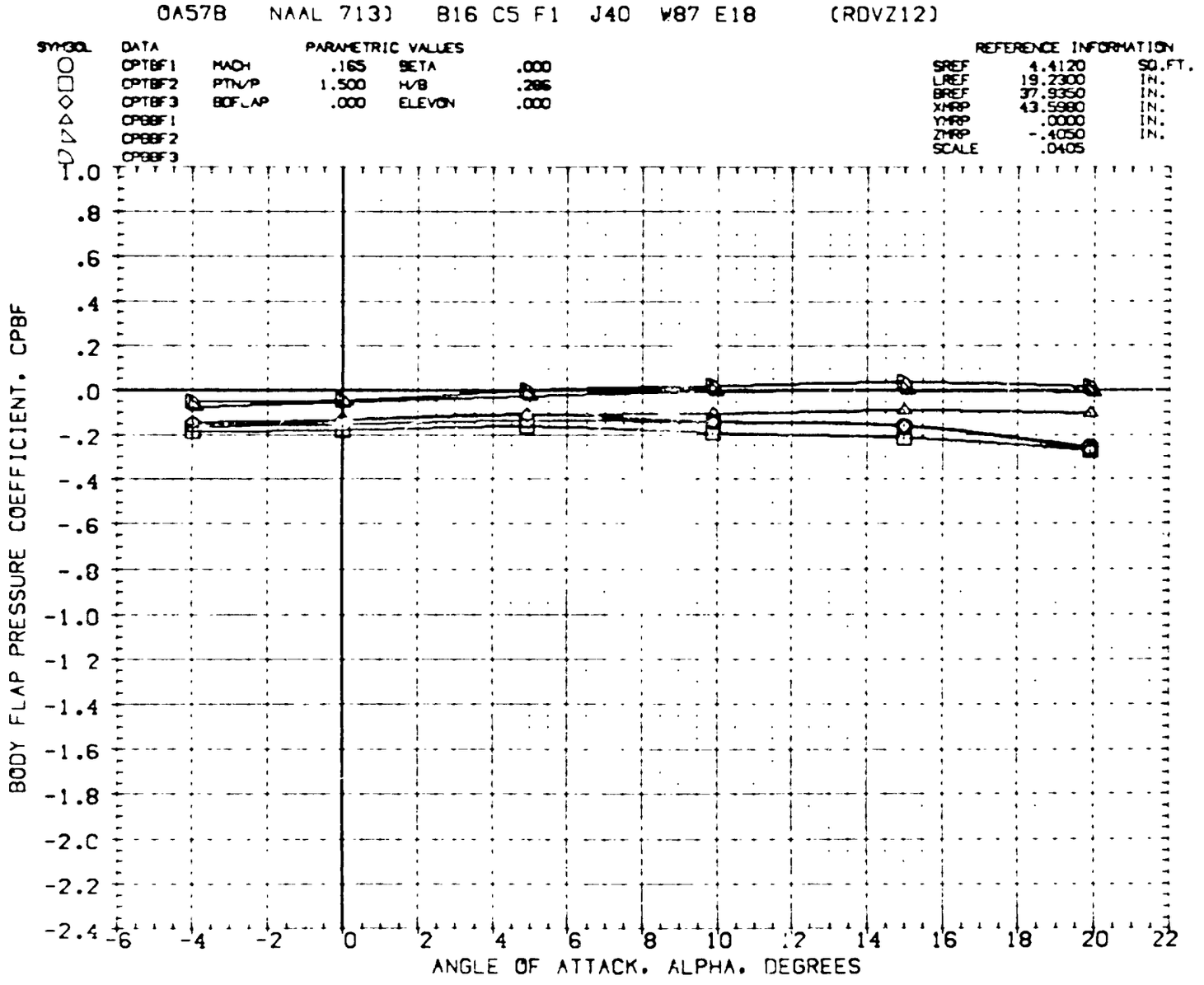


FIG. 19 BODY FLAP PRESSURE COEFFICIENTS WITH J4C , 0 ELEVON AND 0 BDFLAP

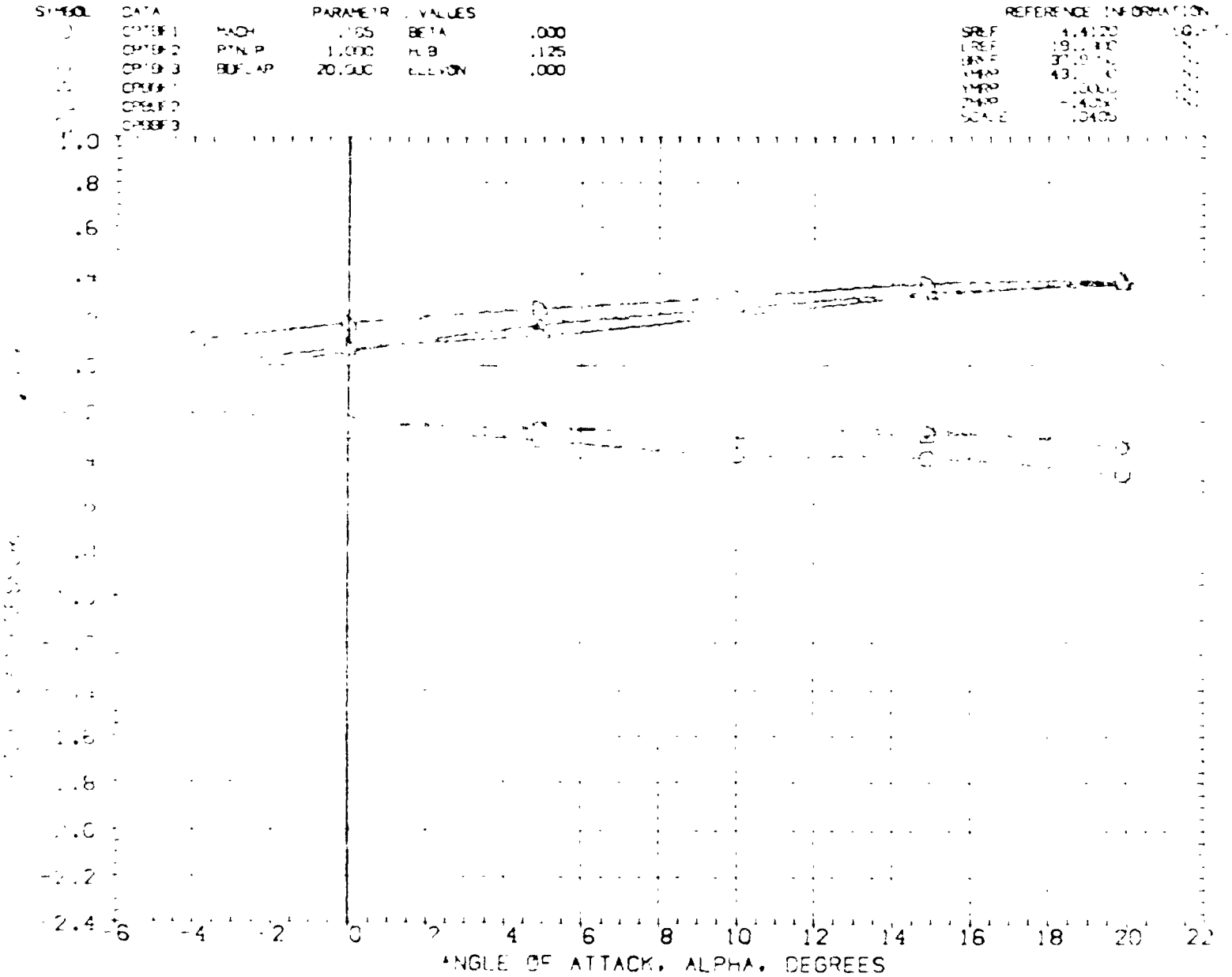


FIG. 20 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BOFLAP

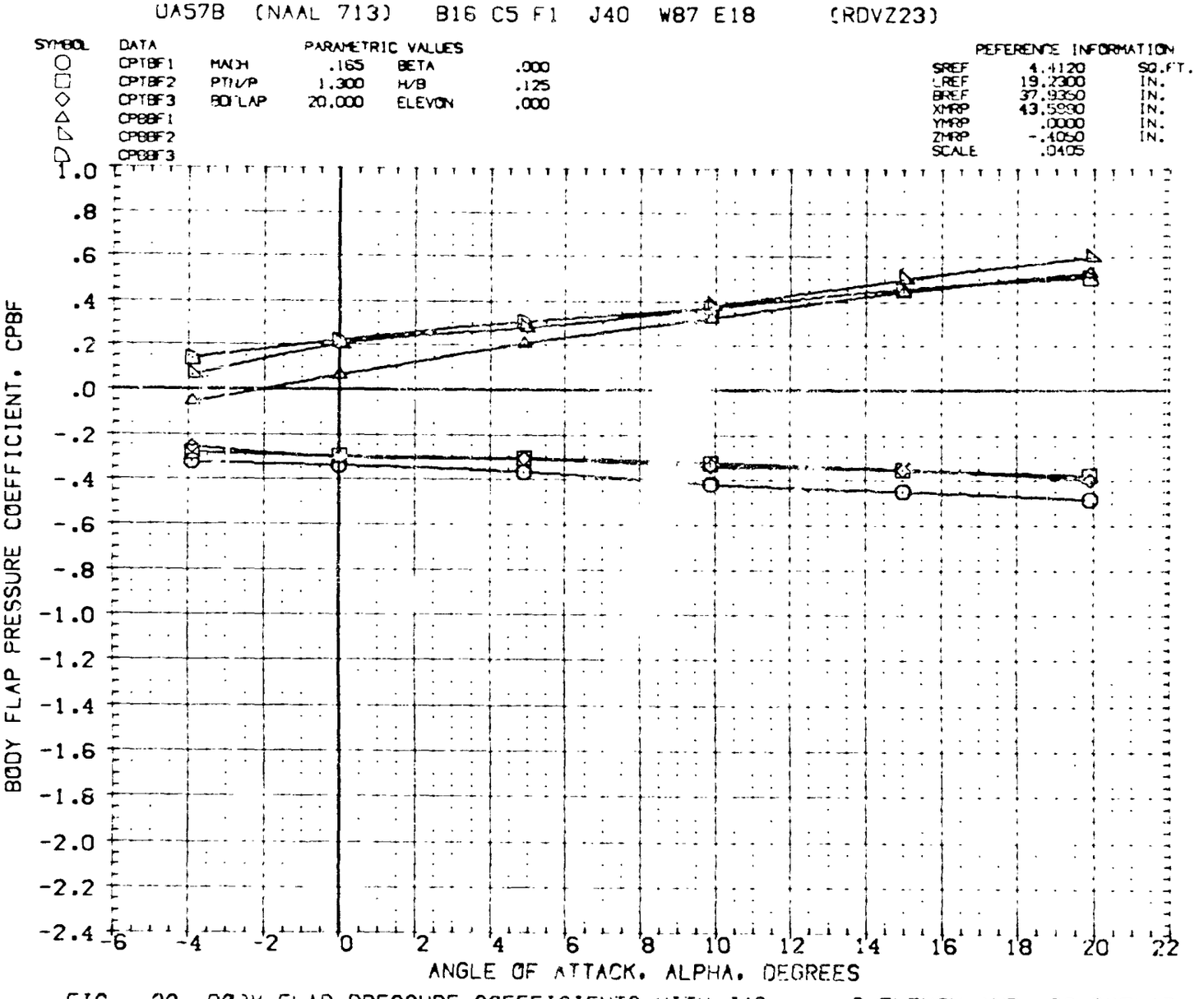


FIG. 20 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BUFLAP

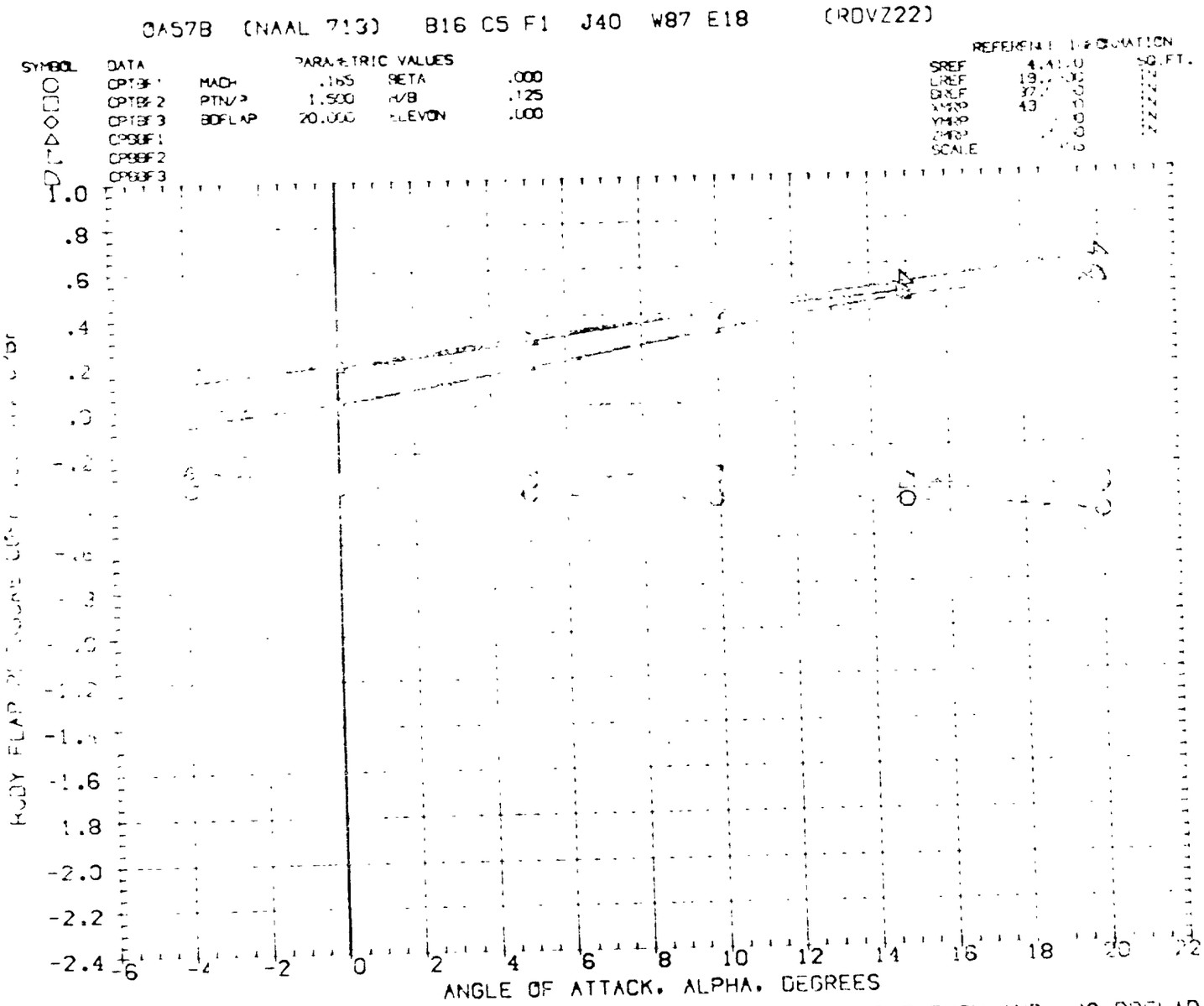


FIG. 20 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

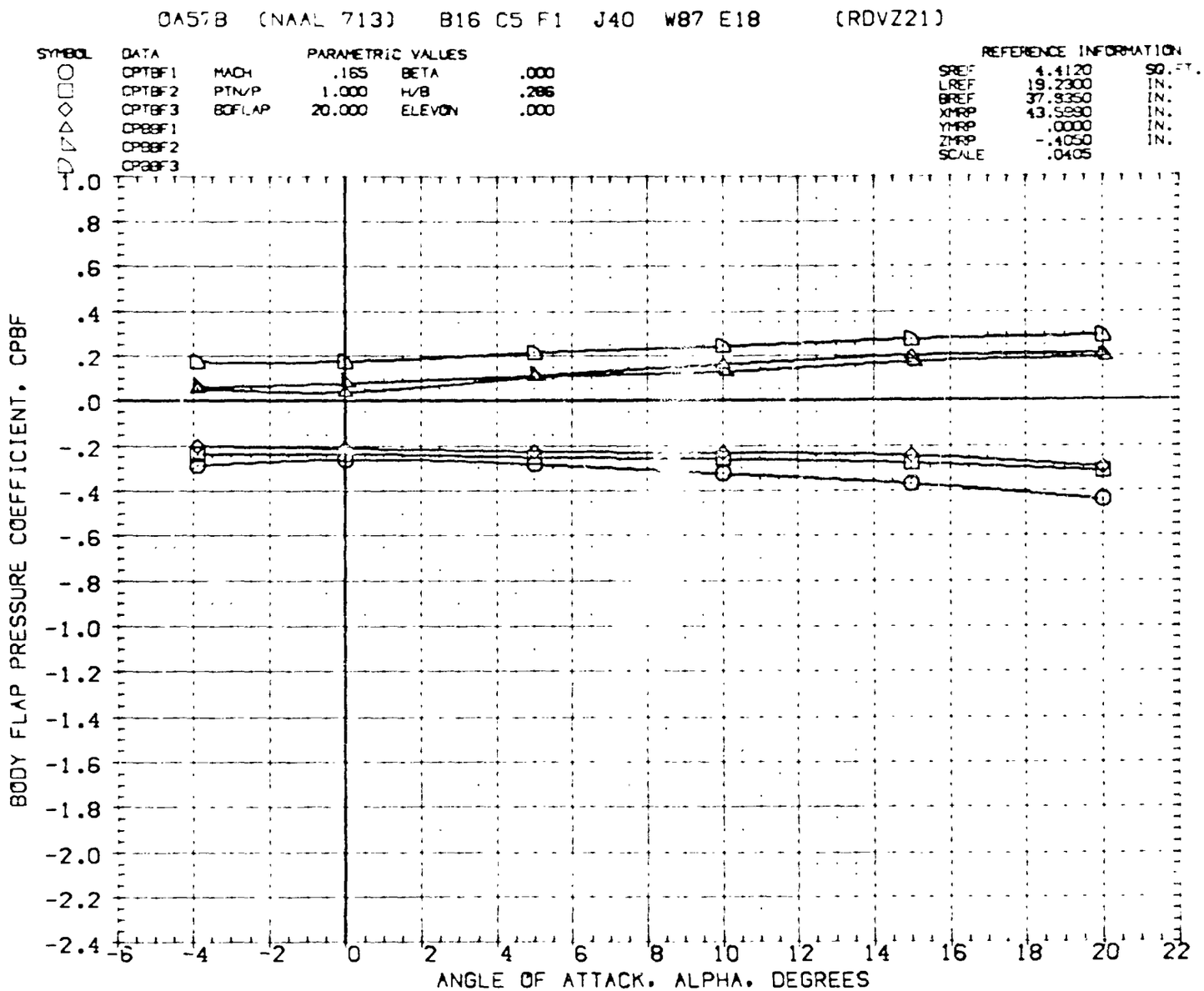


FIG. 20 BOD FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

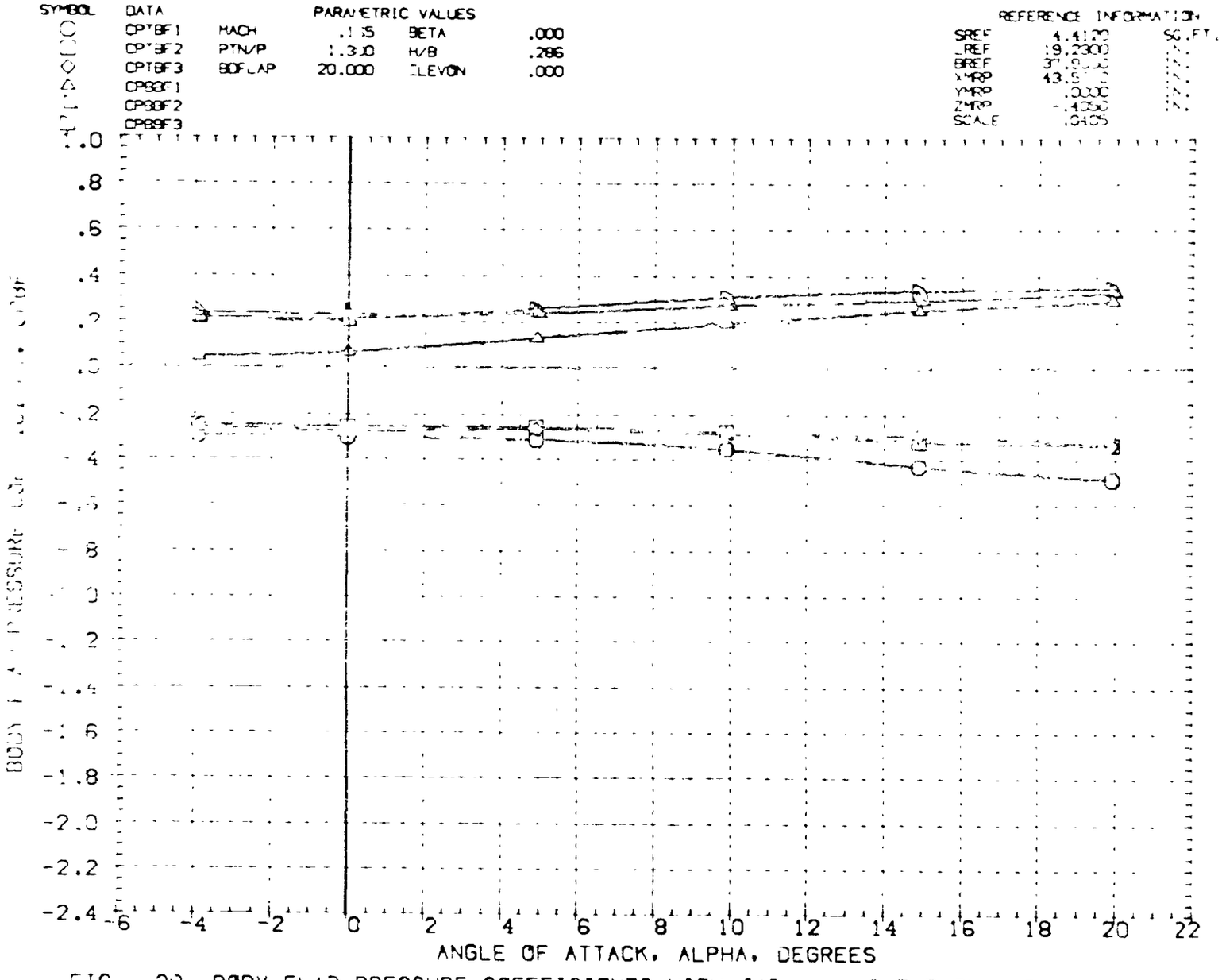


FIG. 20 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

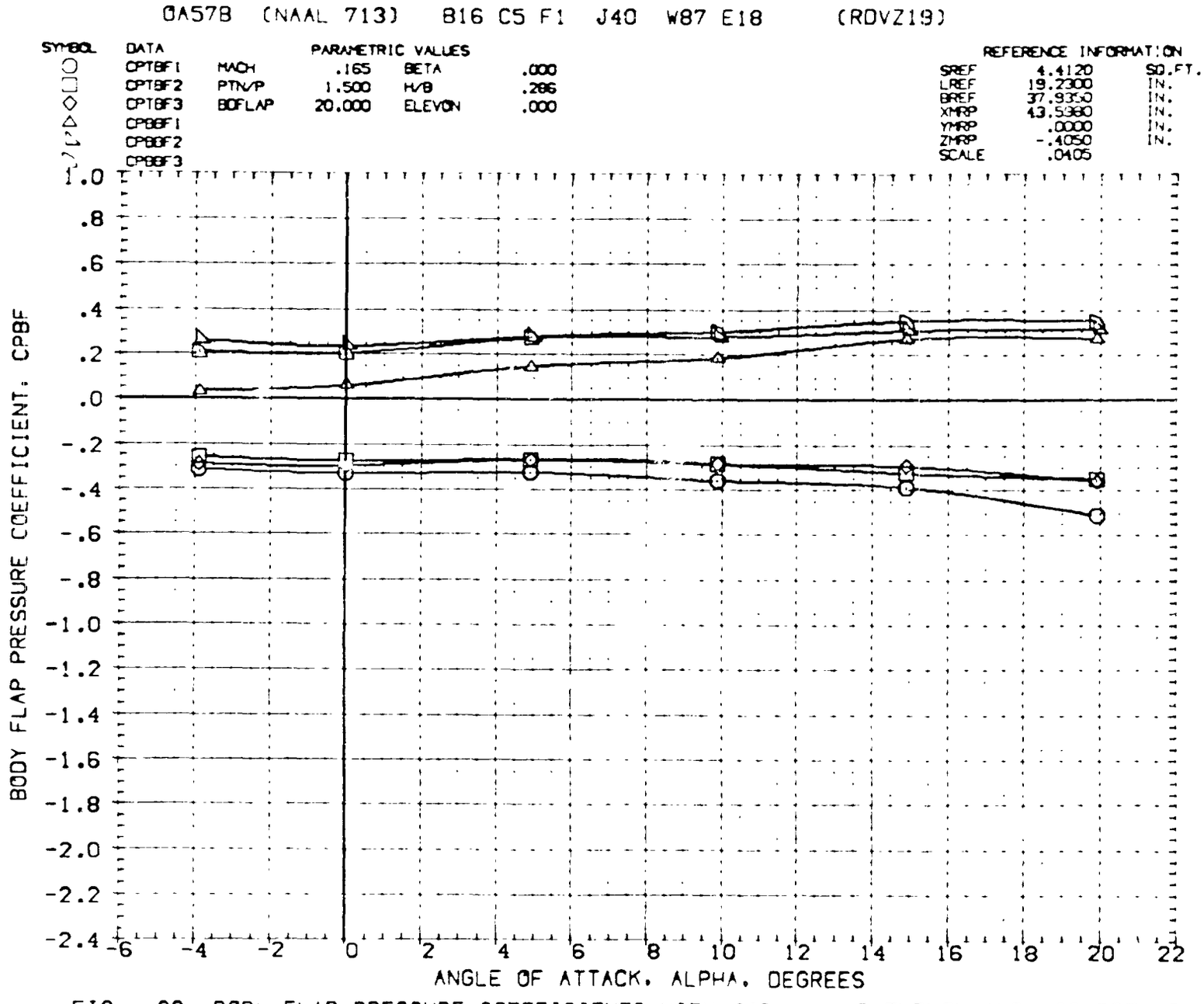


FIG. 20 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

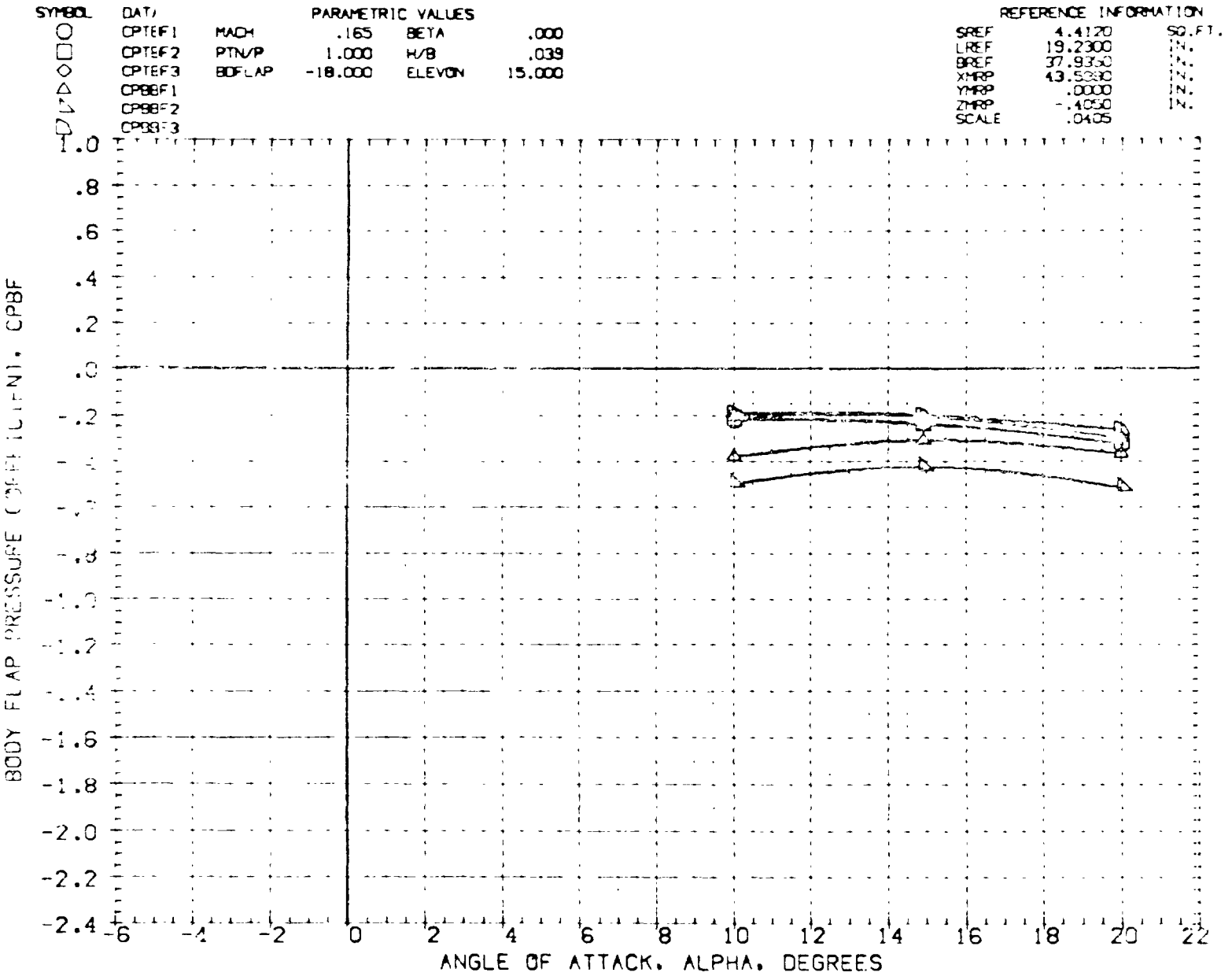


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J4C , 15 ELEVON AND -18 BDFLAP

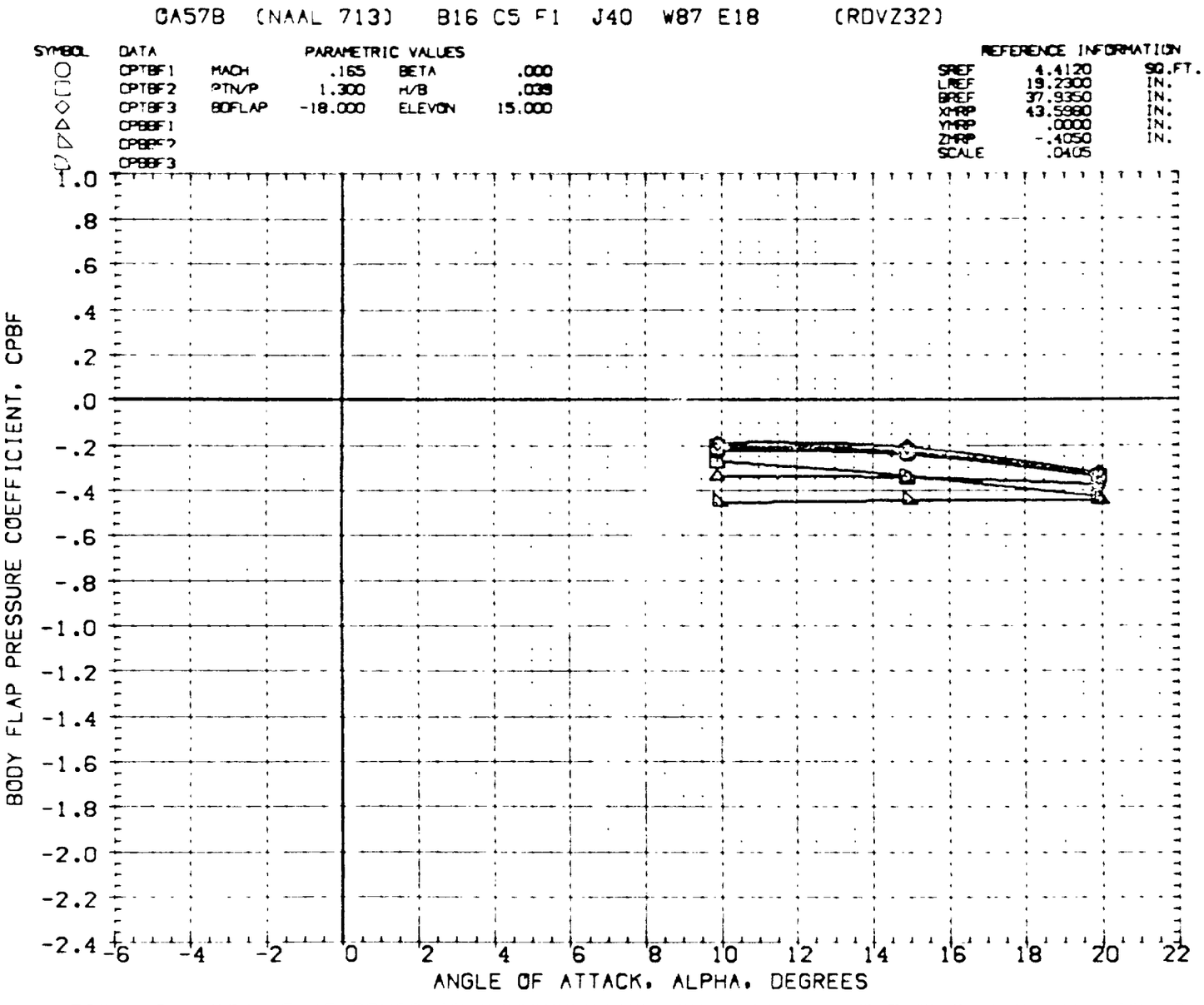


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

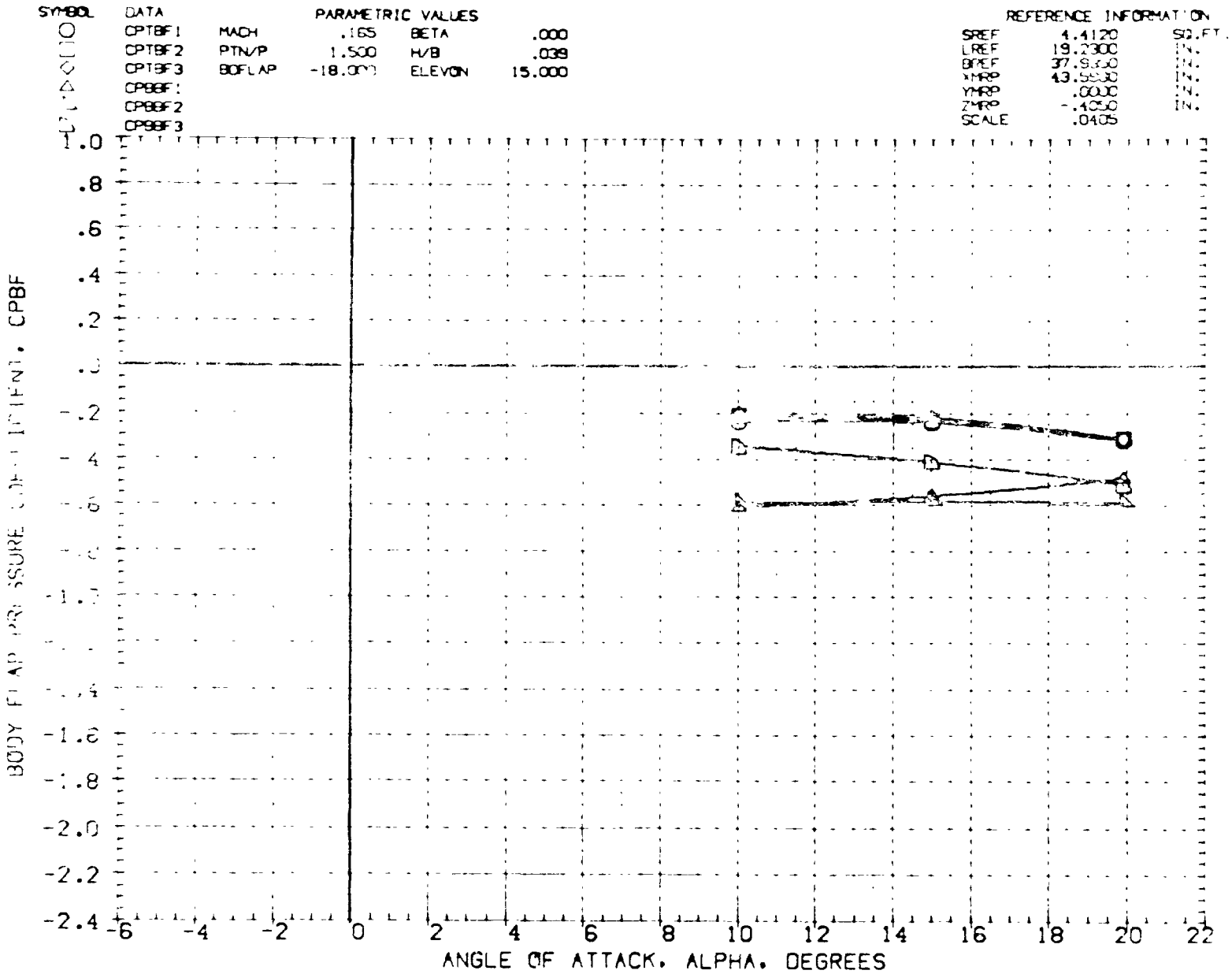


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

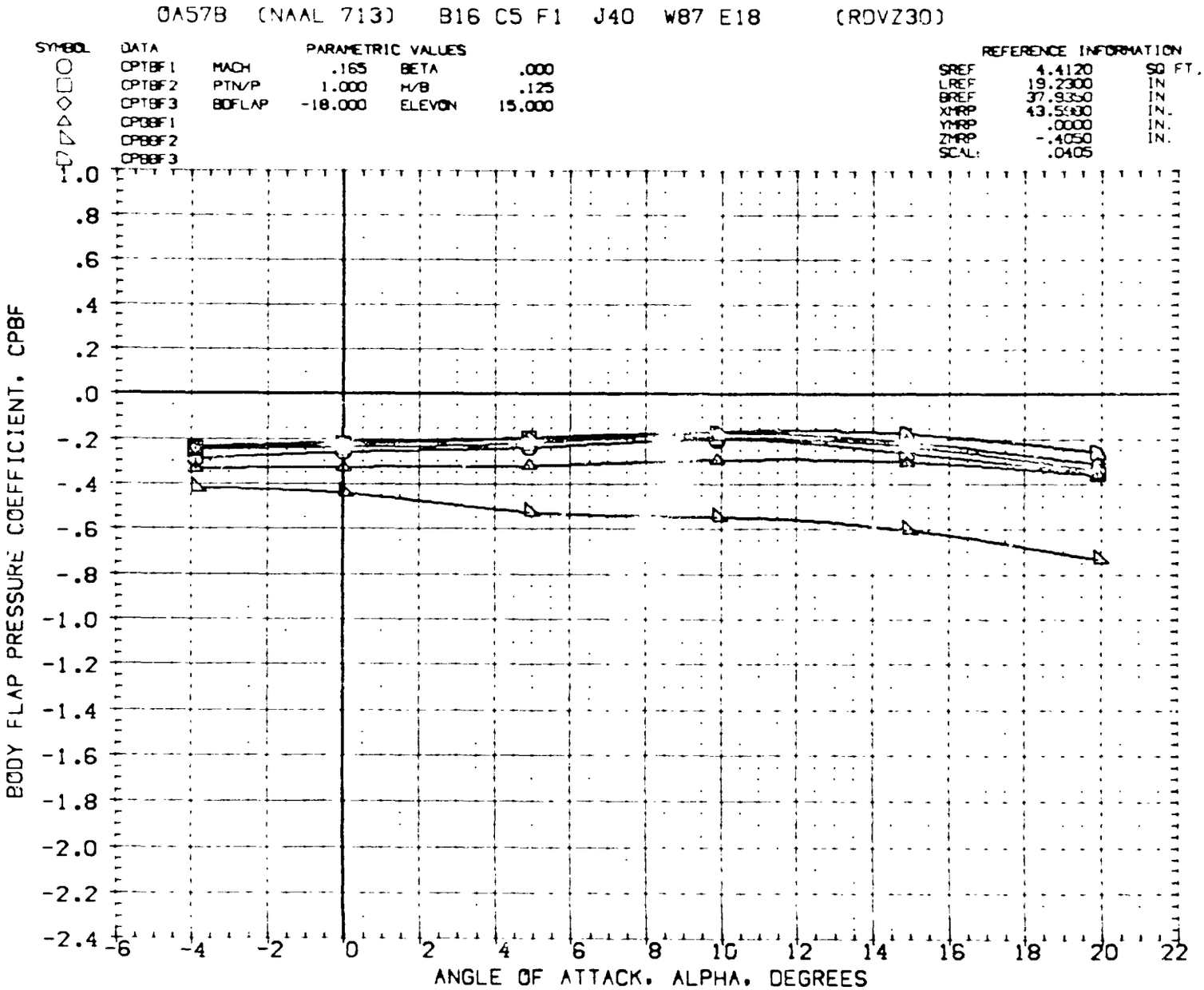


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

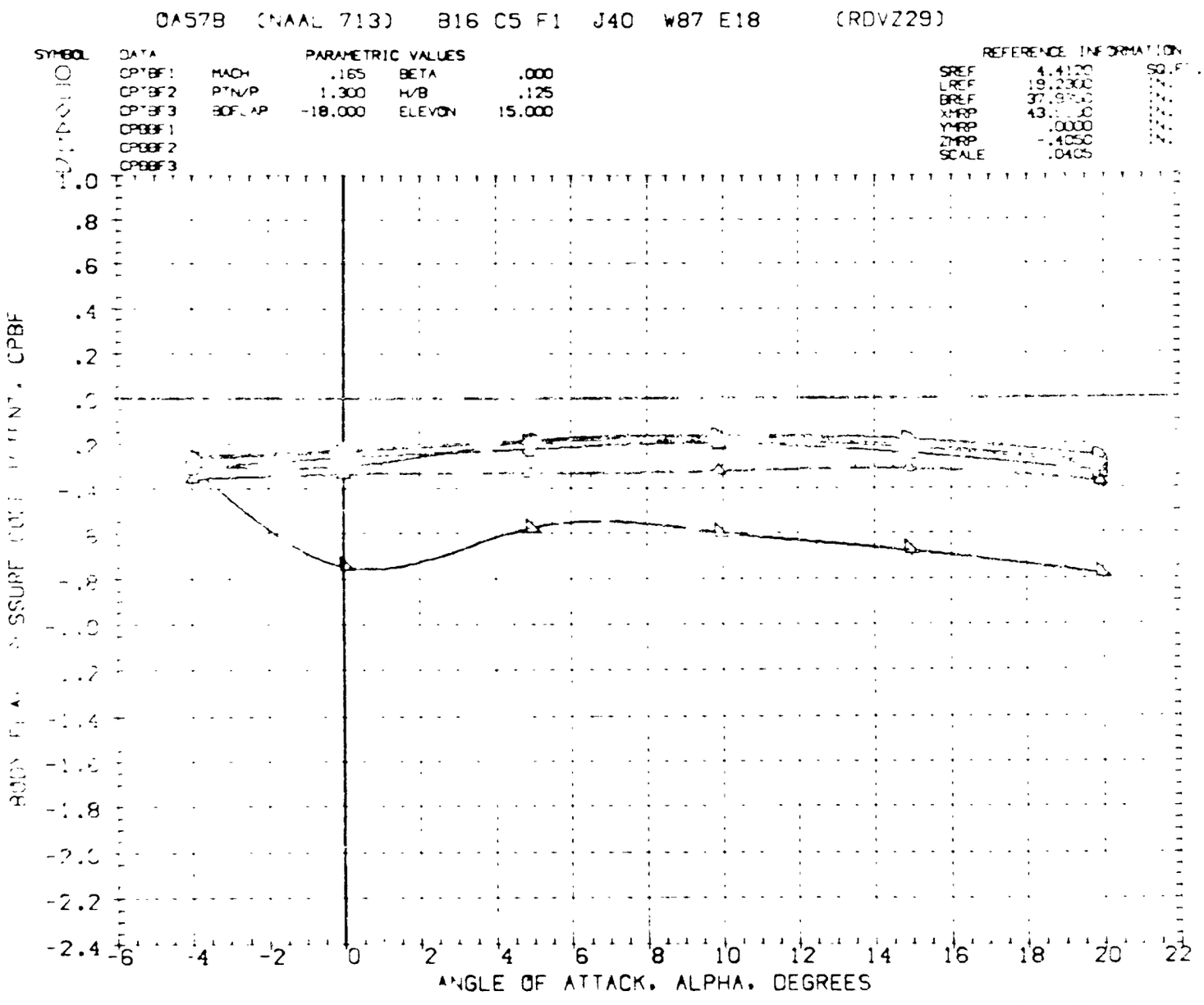


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BOFLAP

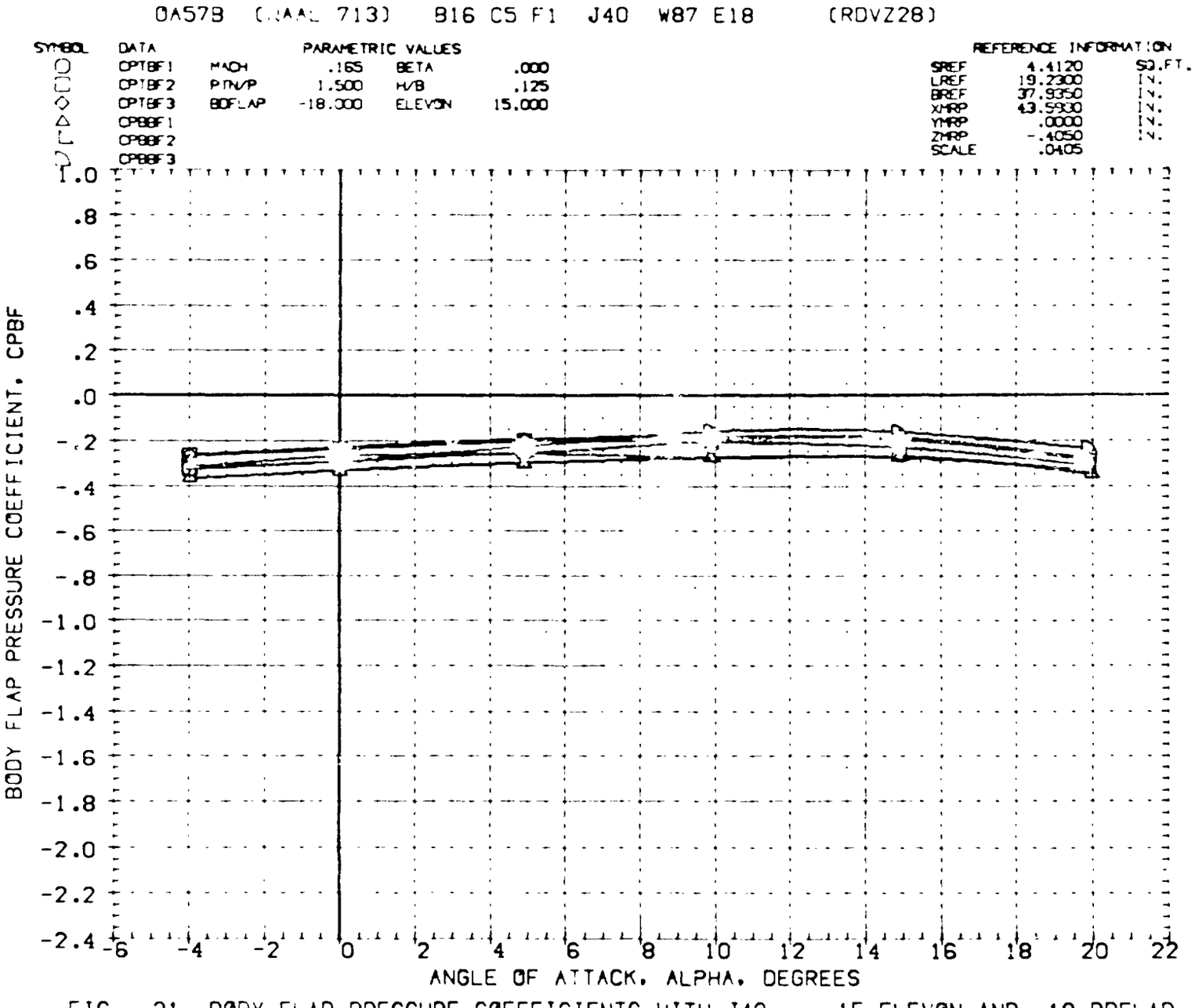


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

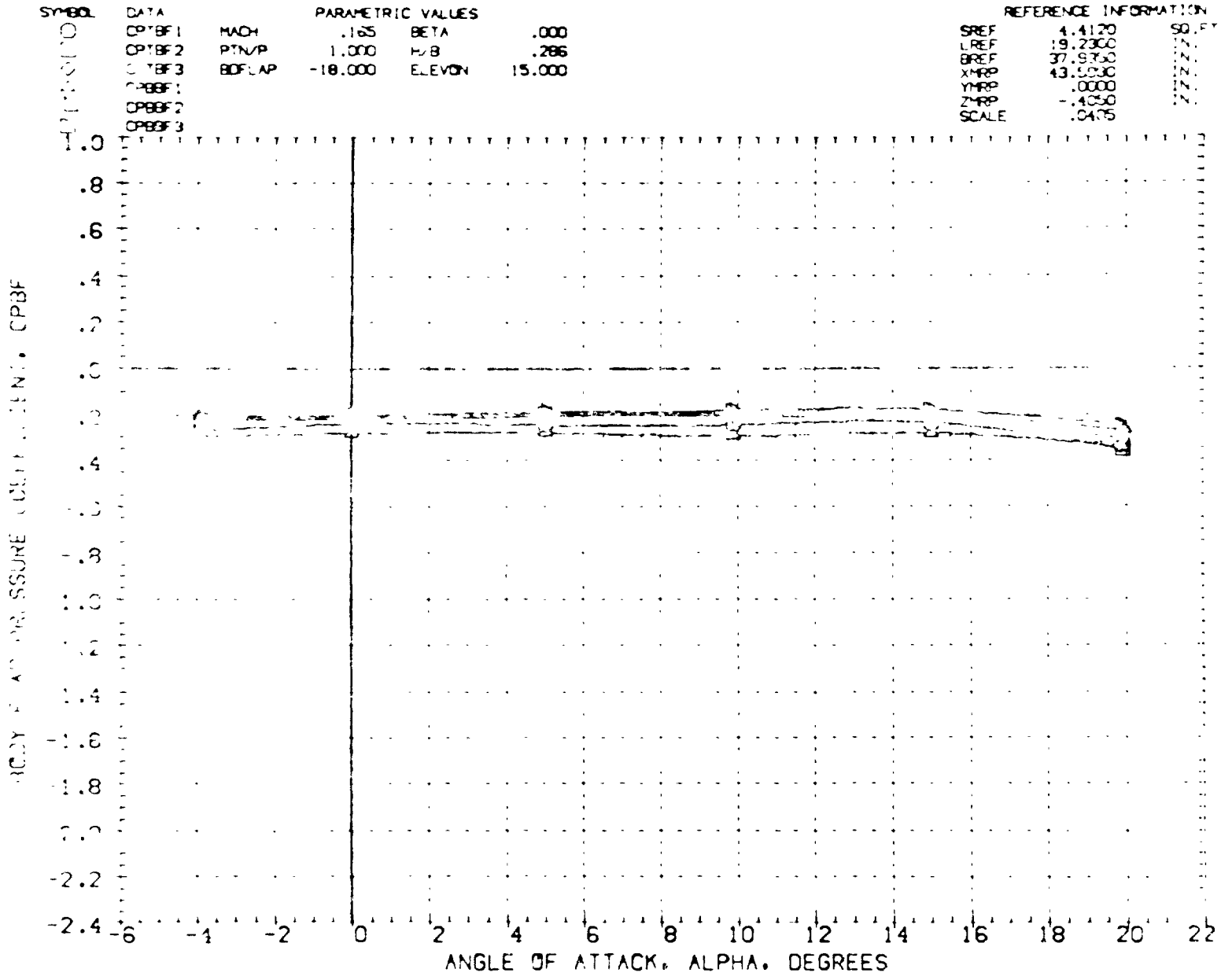


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

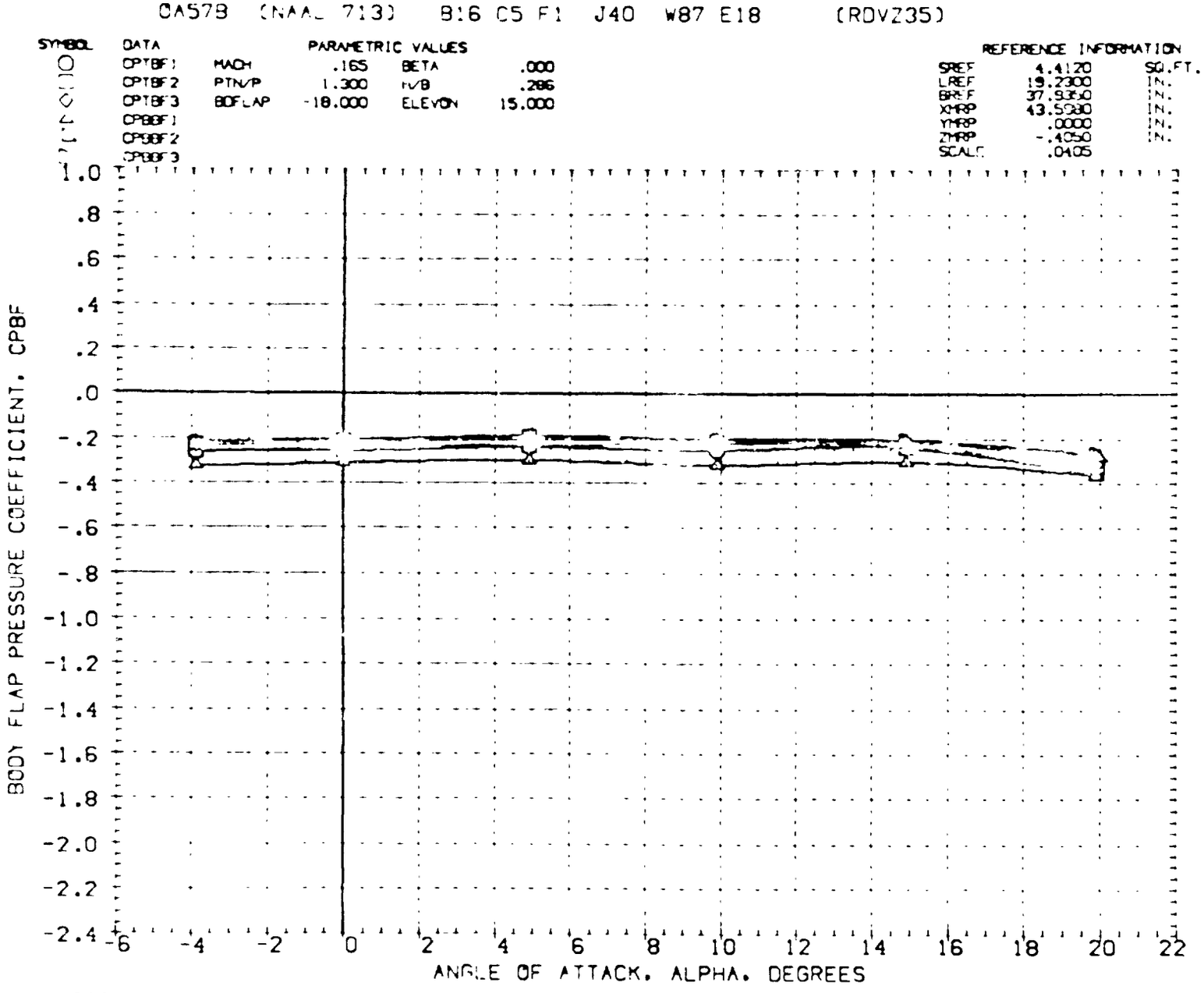


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

C 573 (NAA_ 713) B16 C5 F1 J40 W87 E18 (RDVZ34)

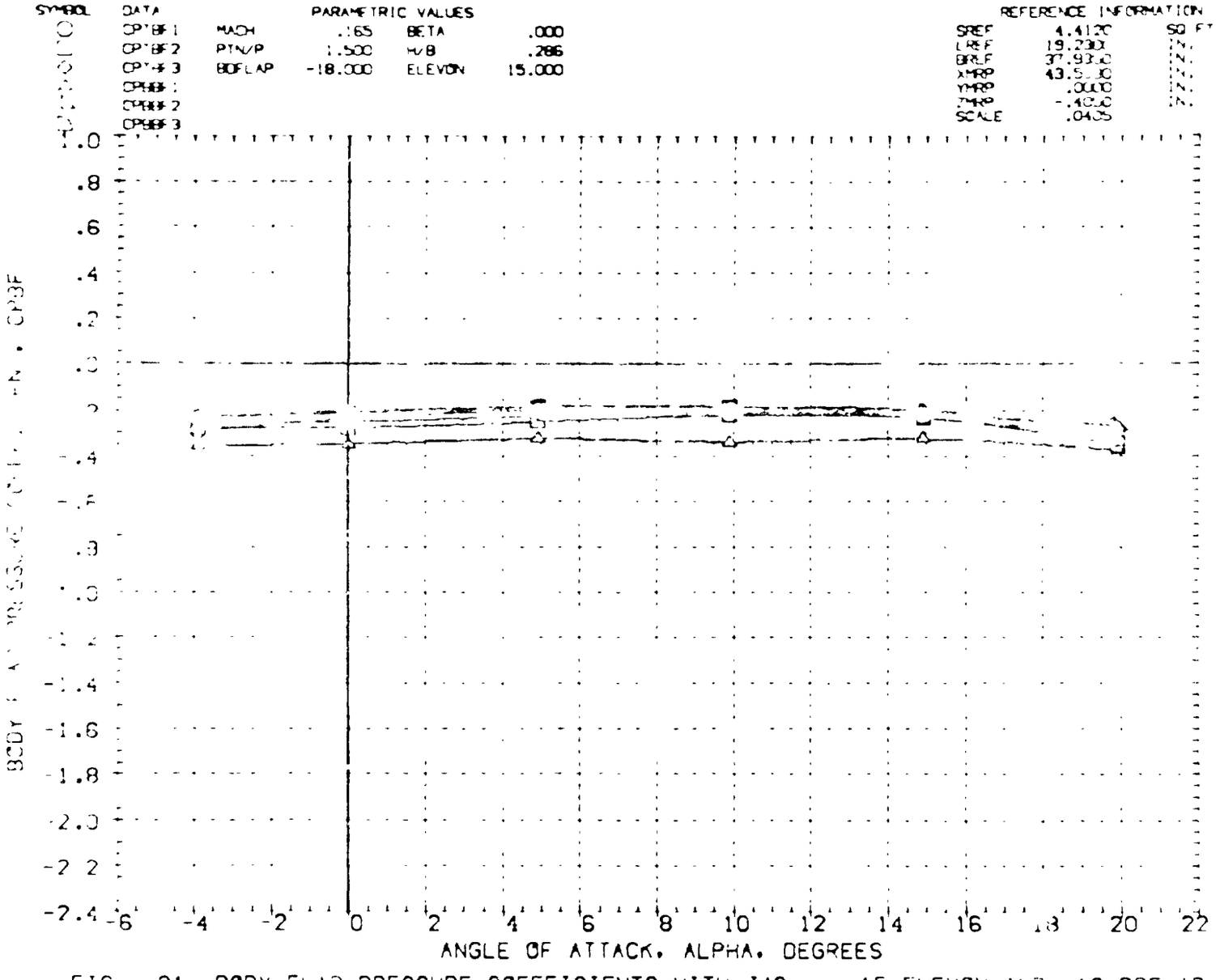


FIG. 21 BODY FLAP PRESSURE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

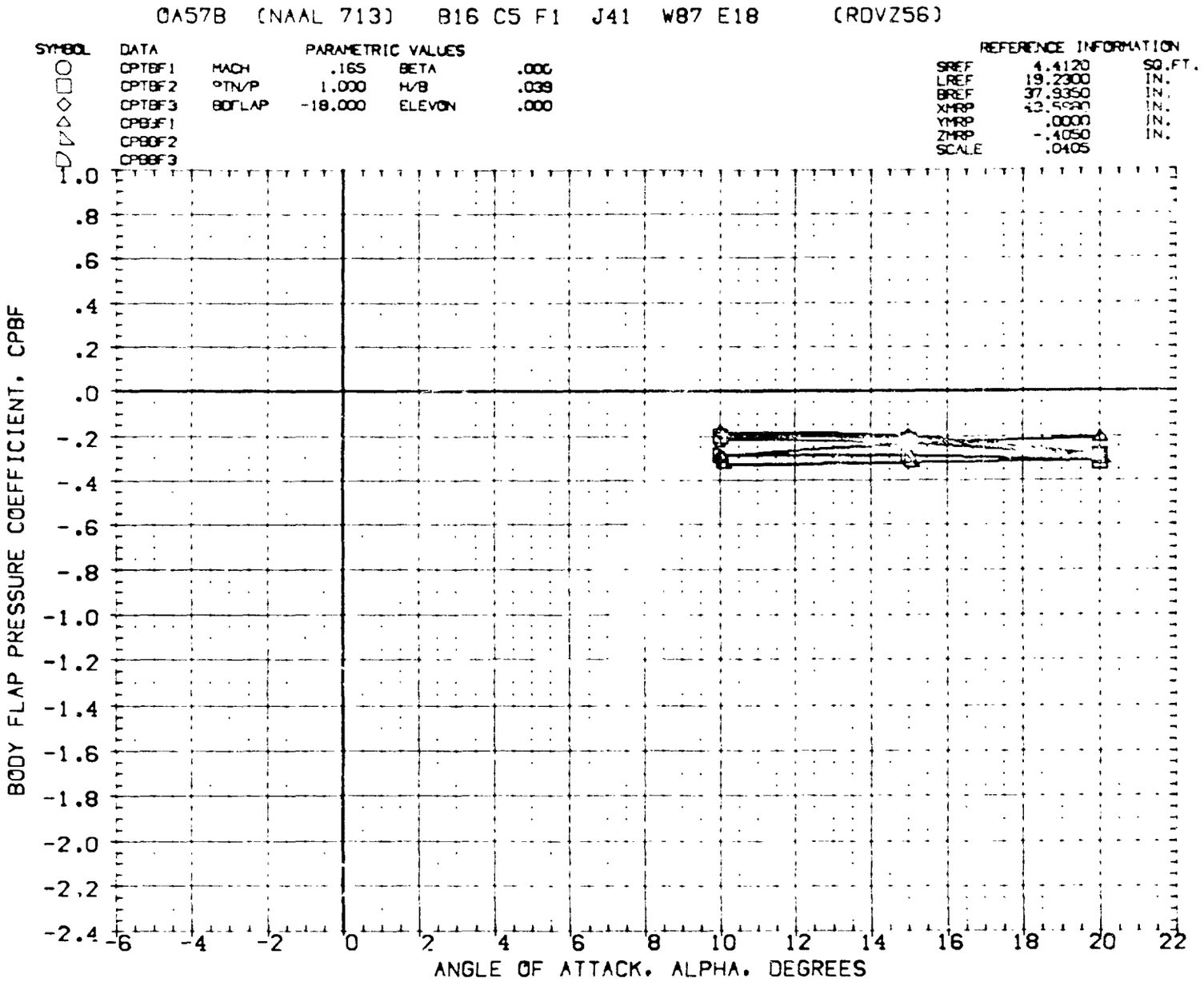


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

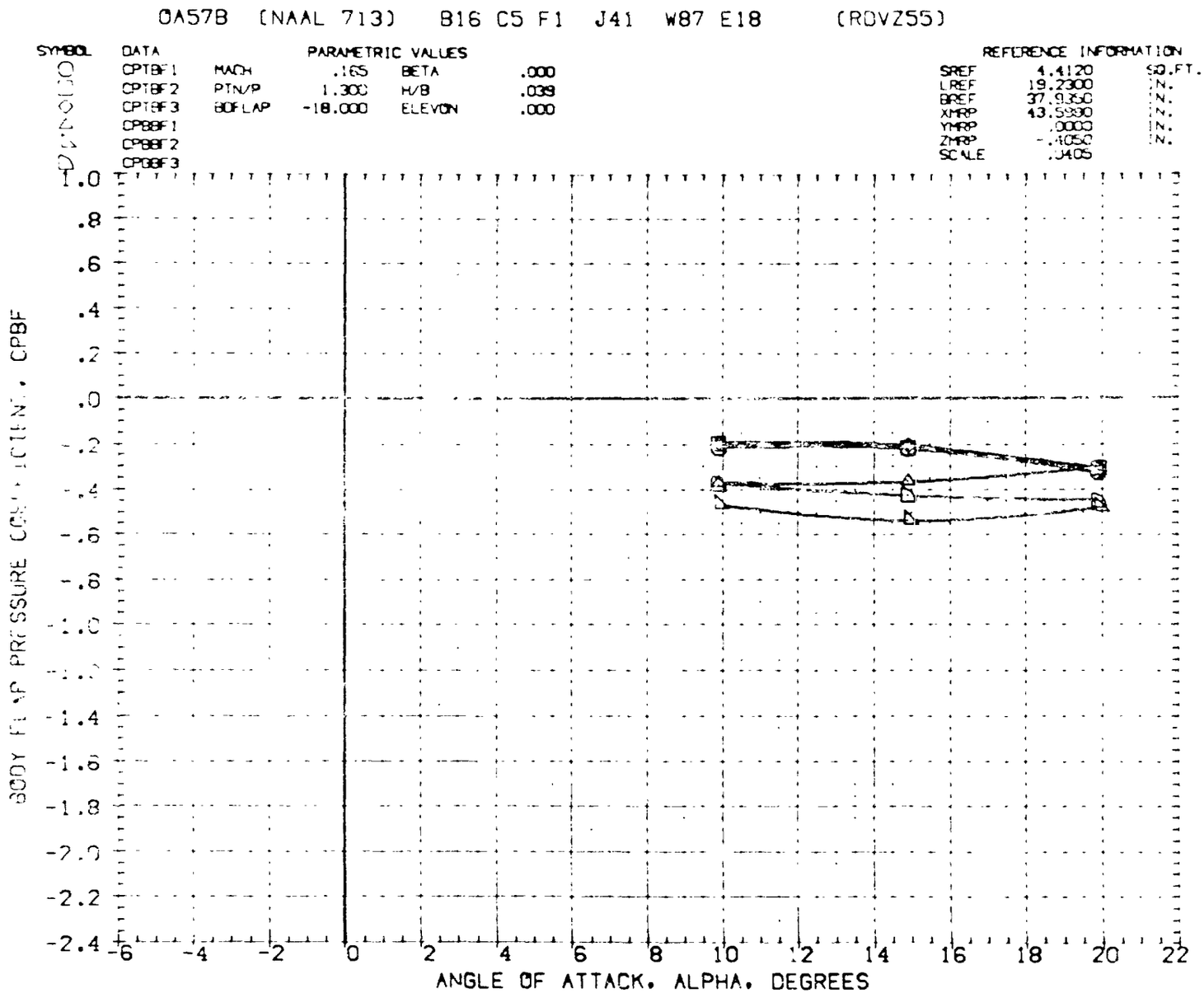


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

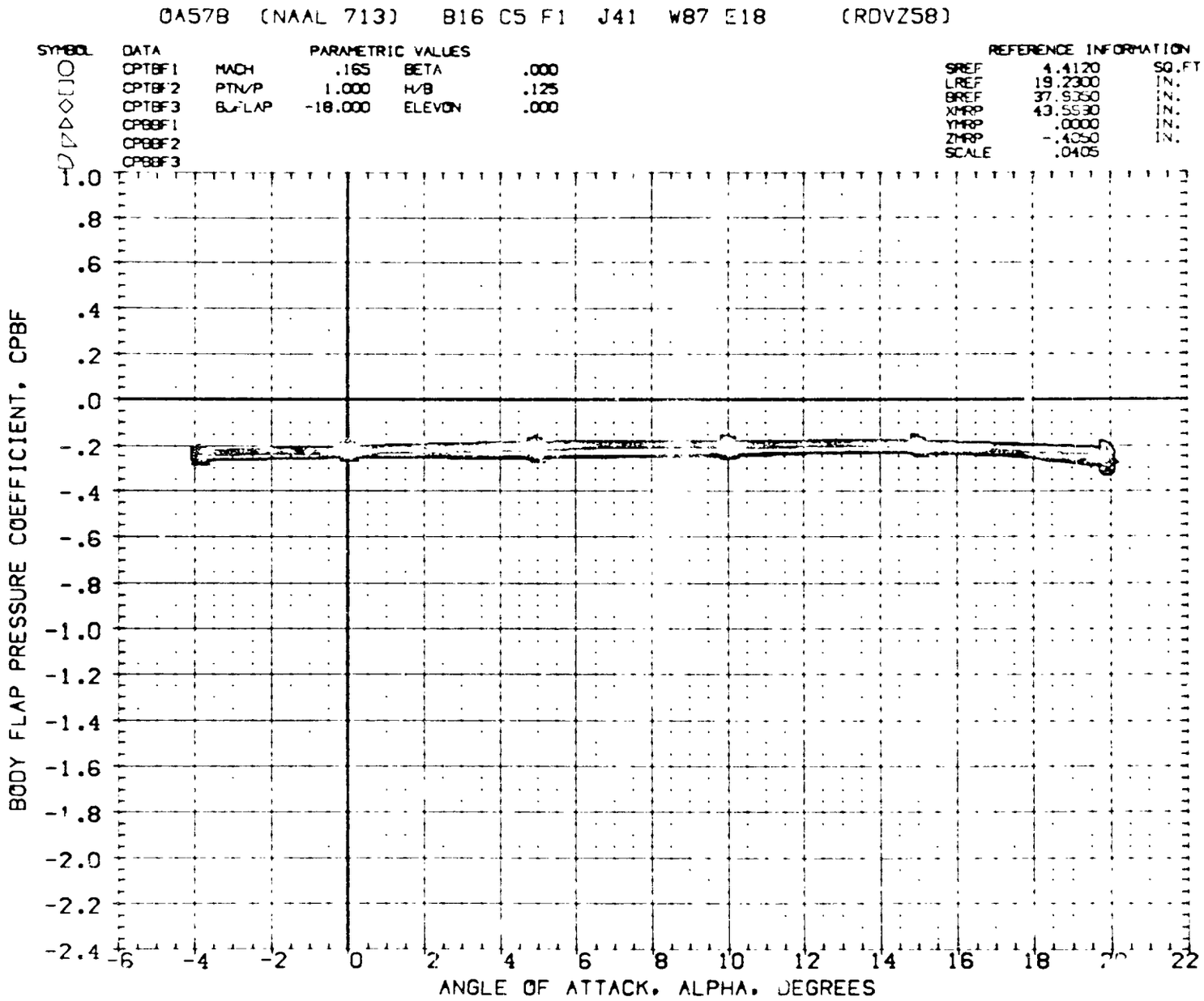


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

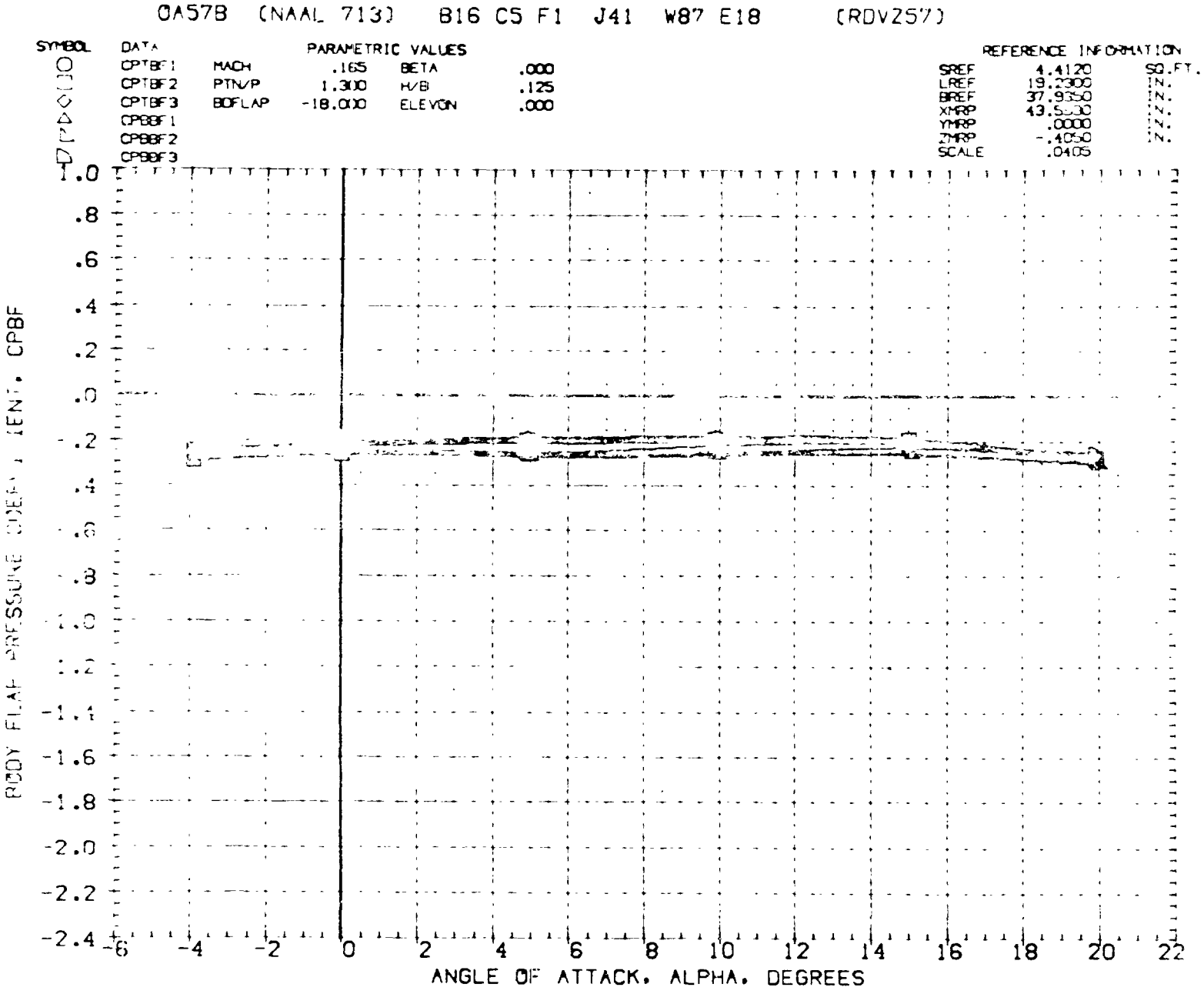


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

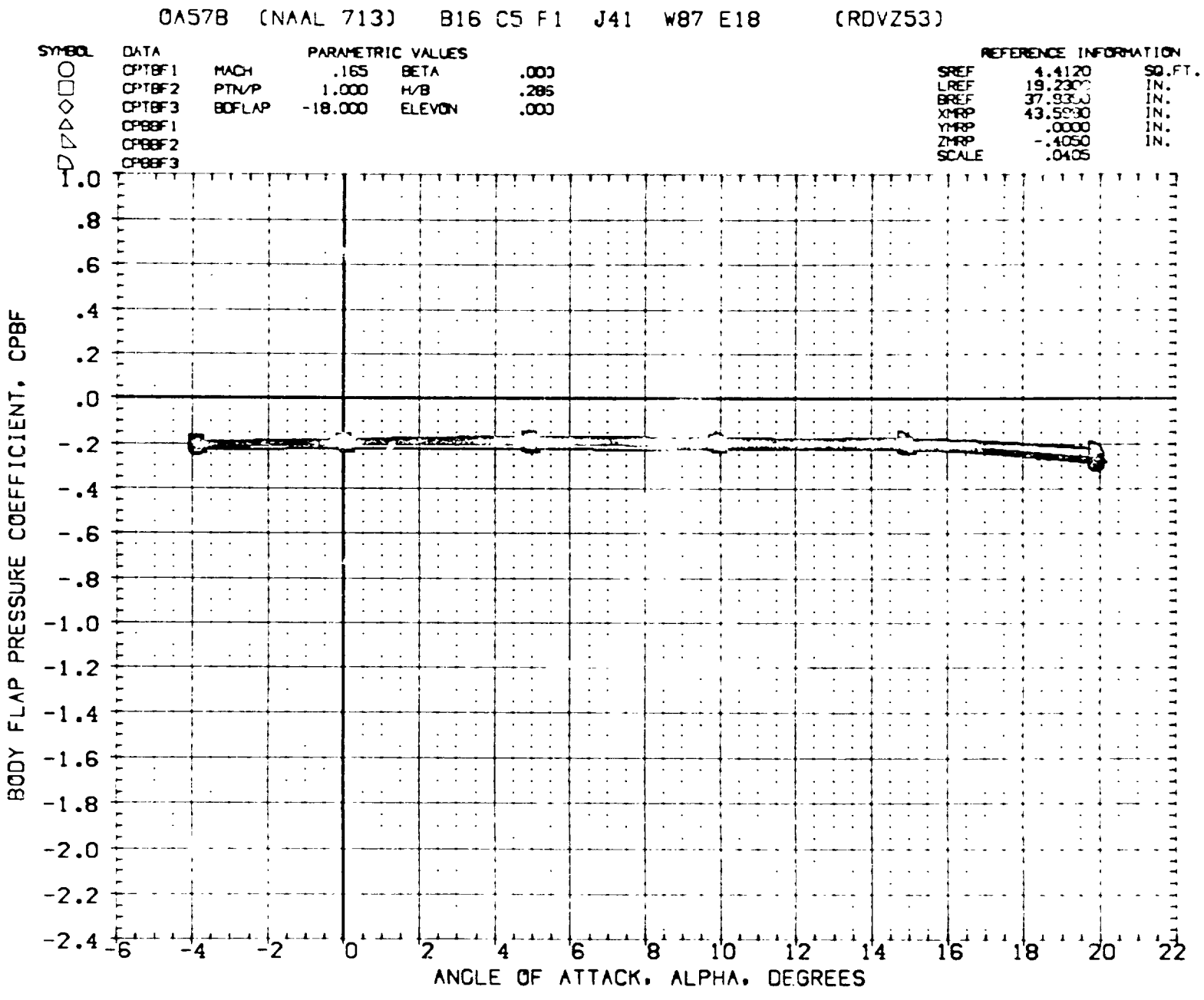


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

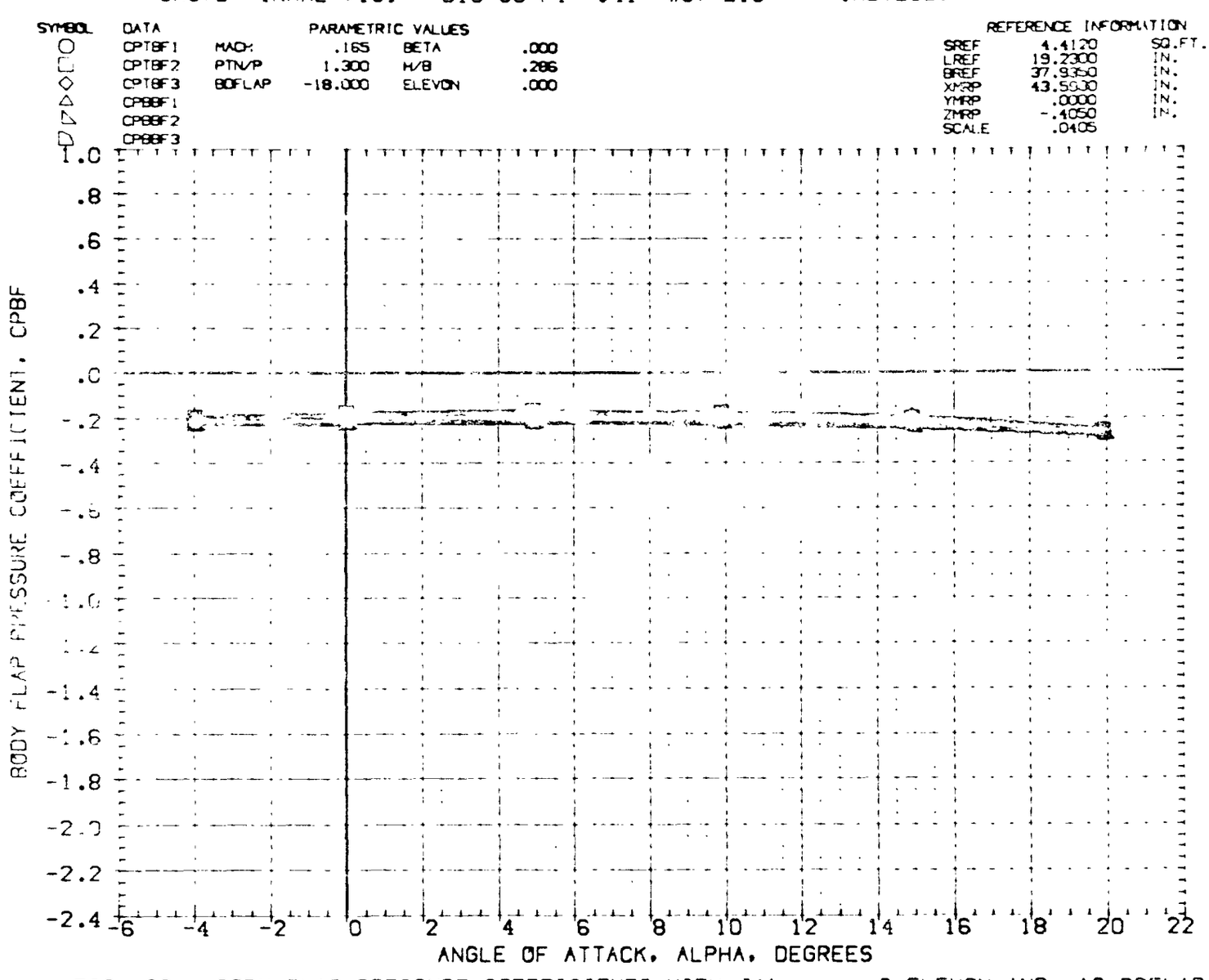


FIG. 22 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

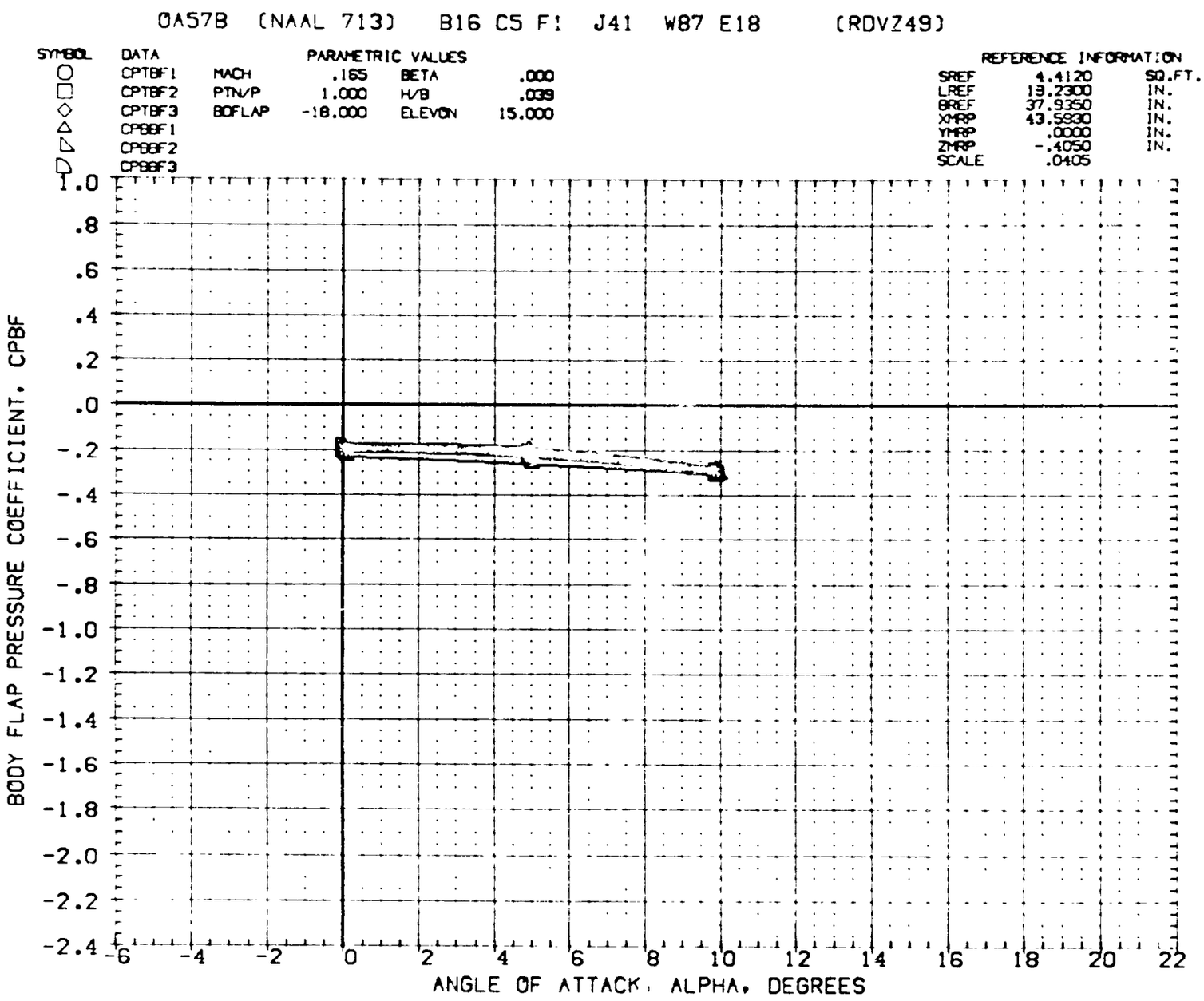


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

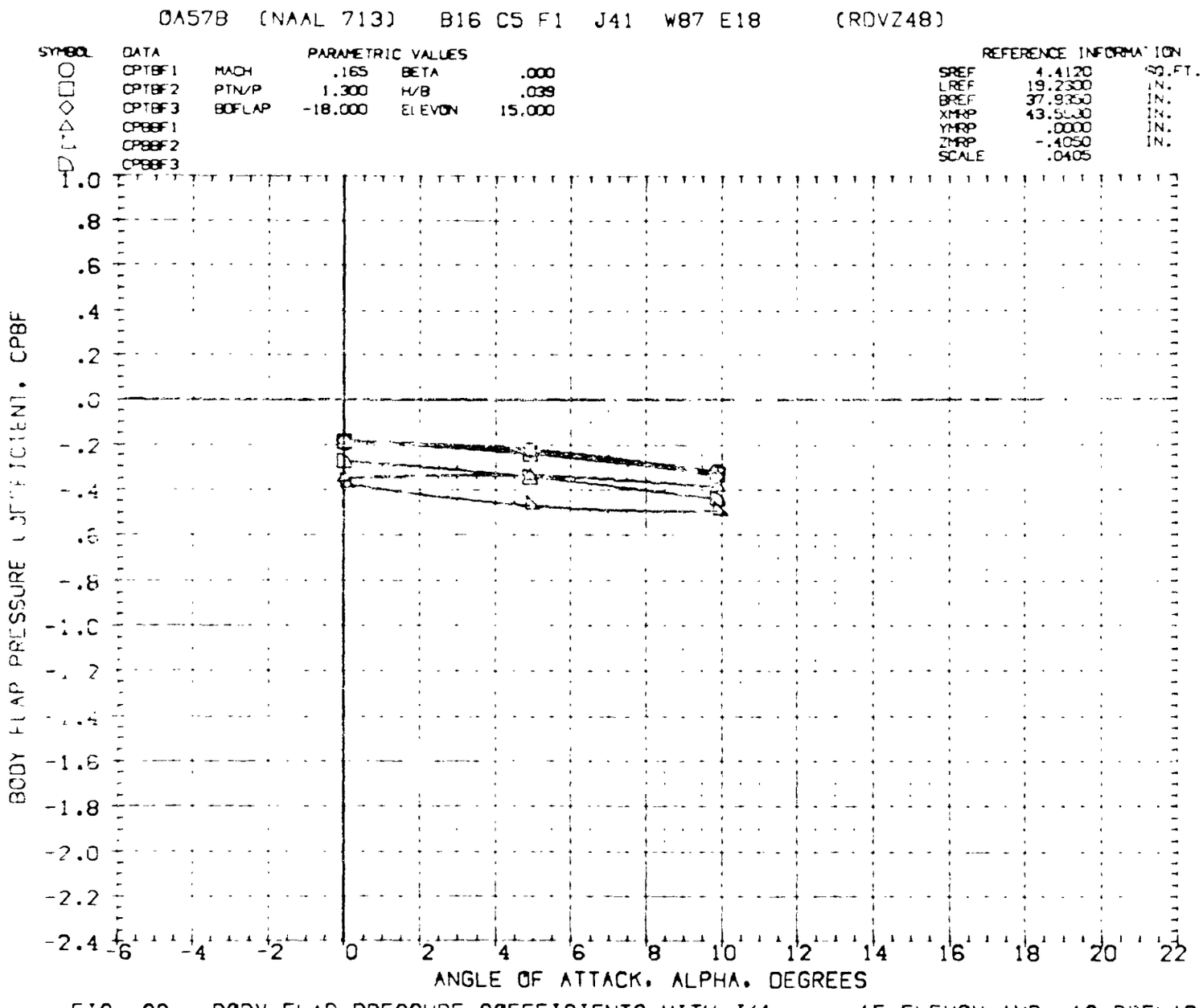


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

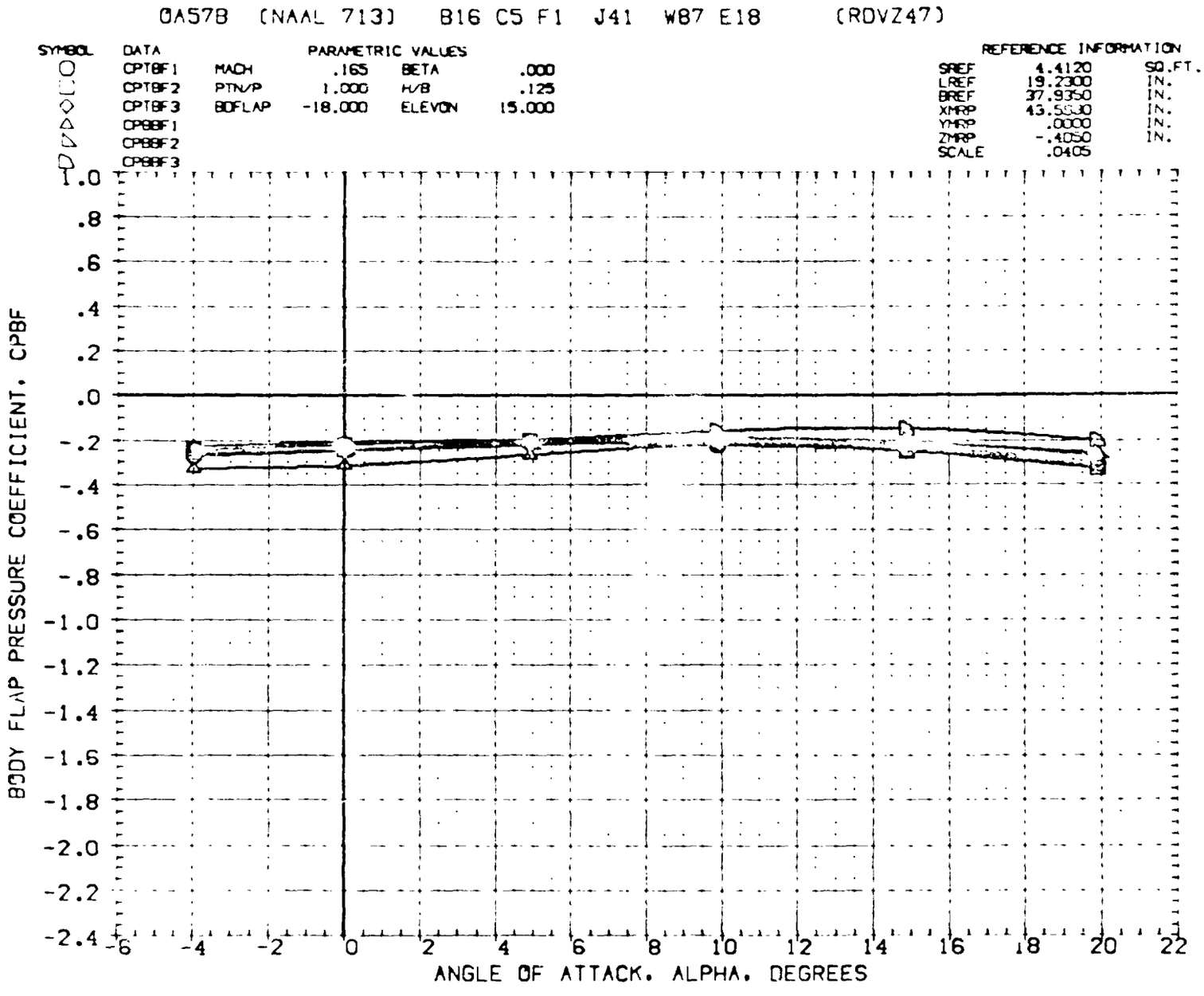


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

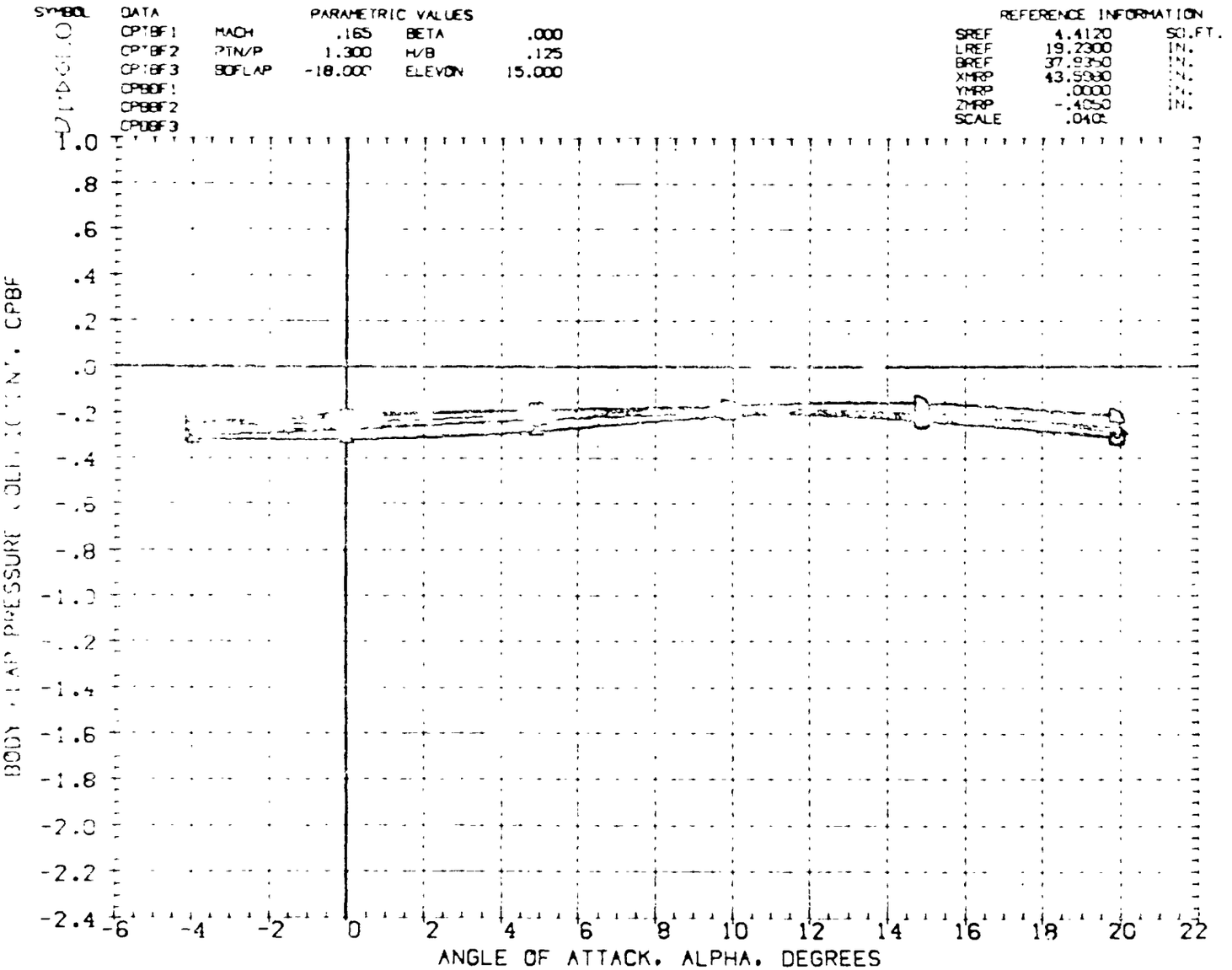


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

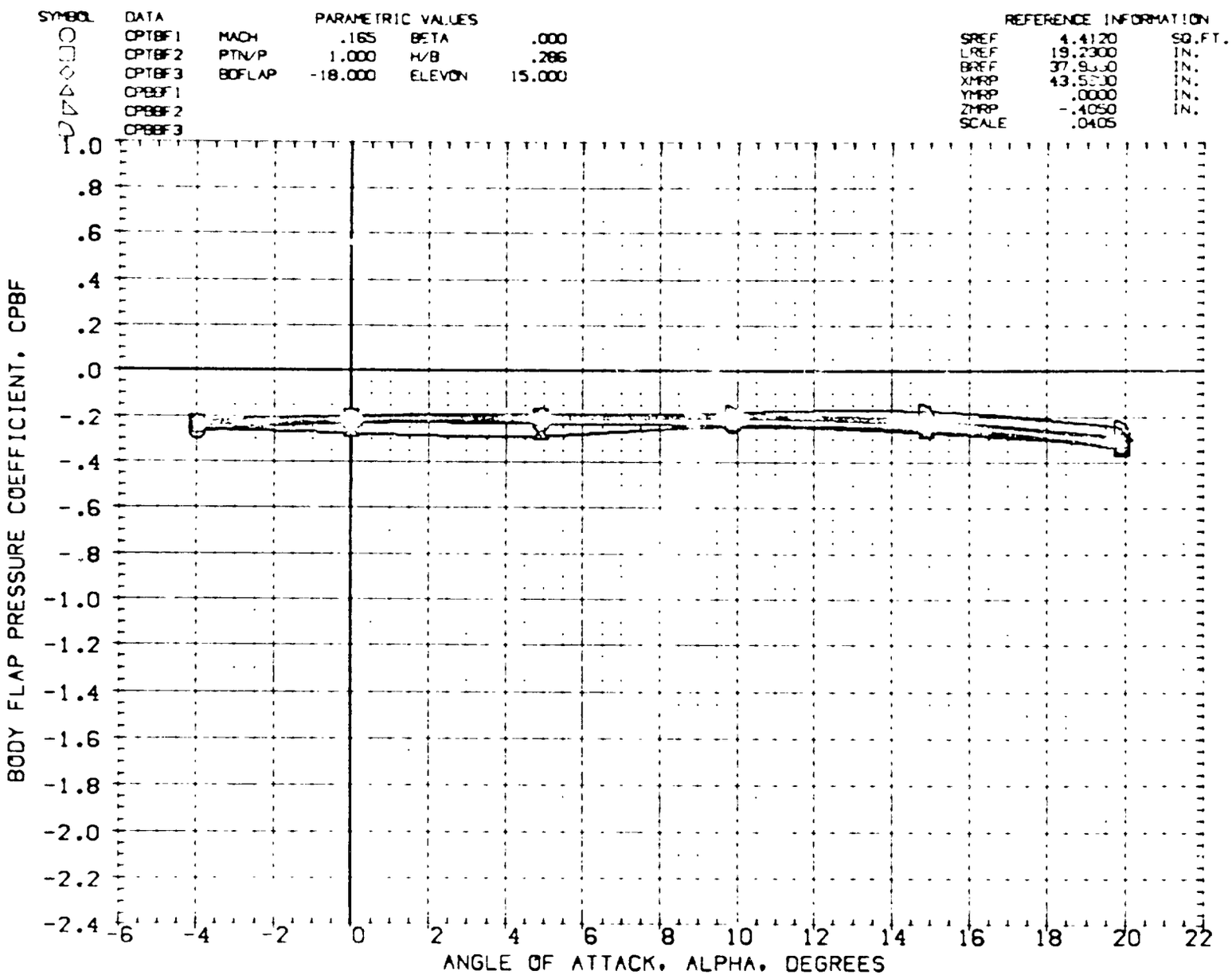


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

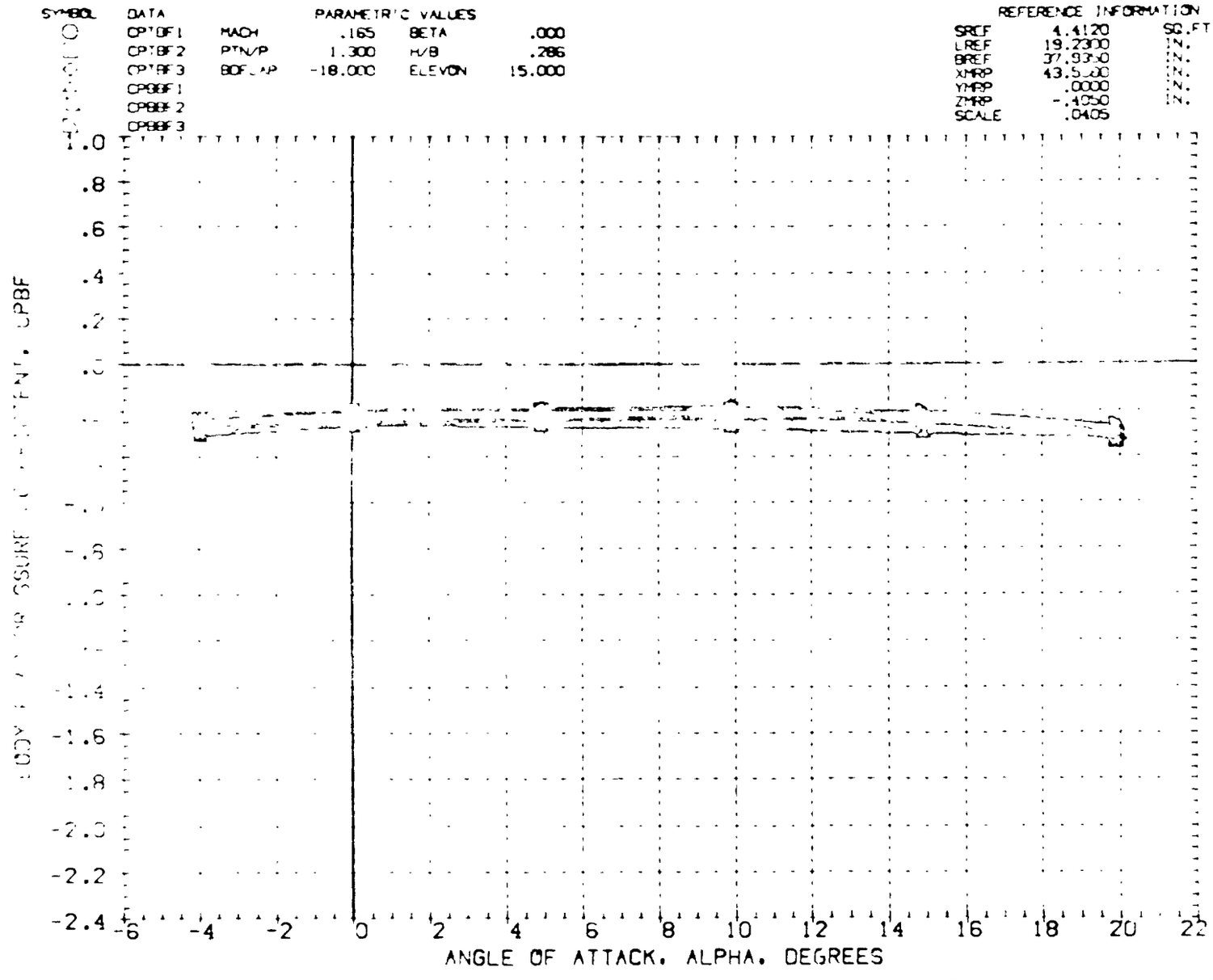


FIG. 23 BODY FLAP PRESSURE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BOFLAP

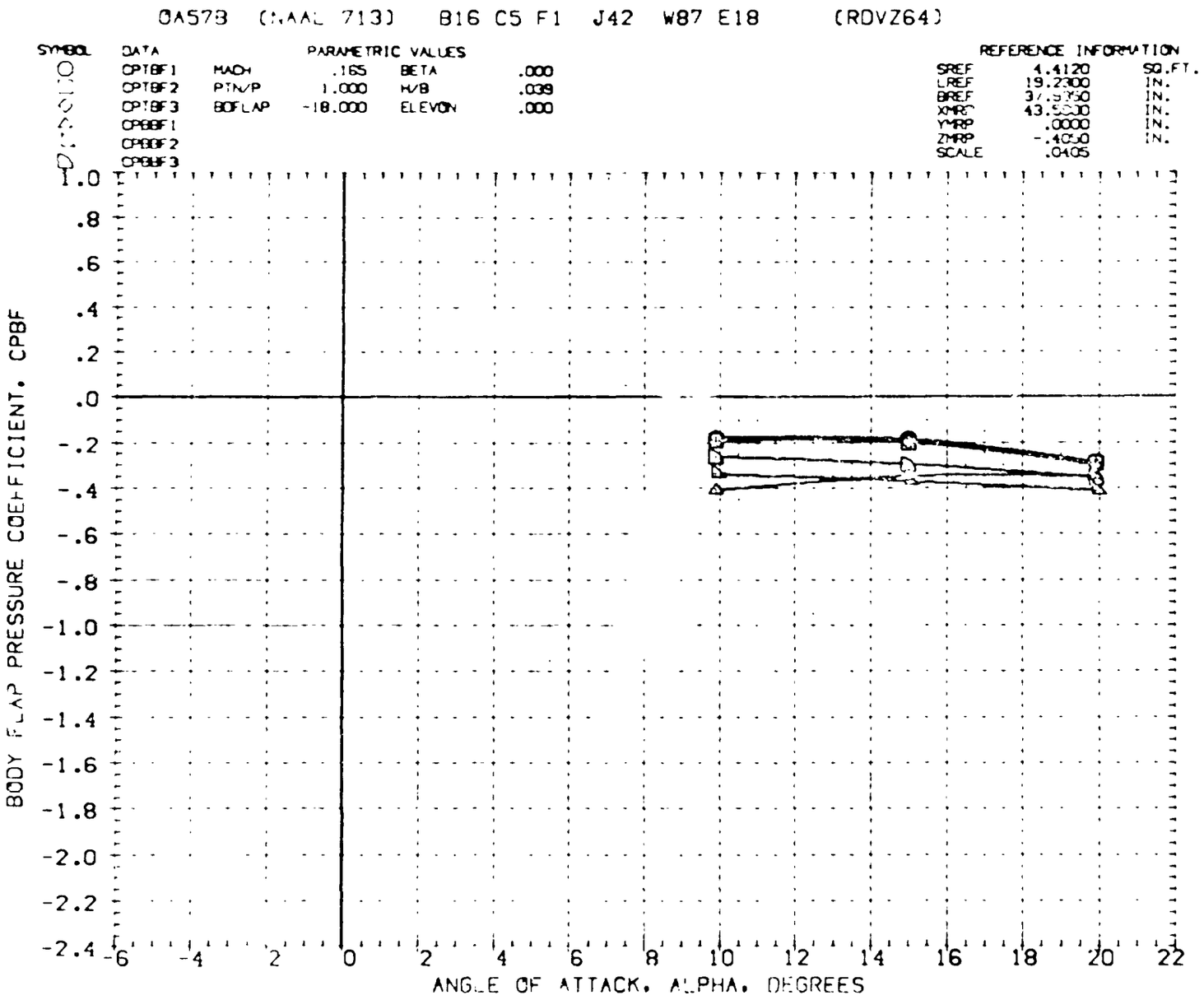


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

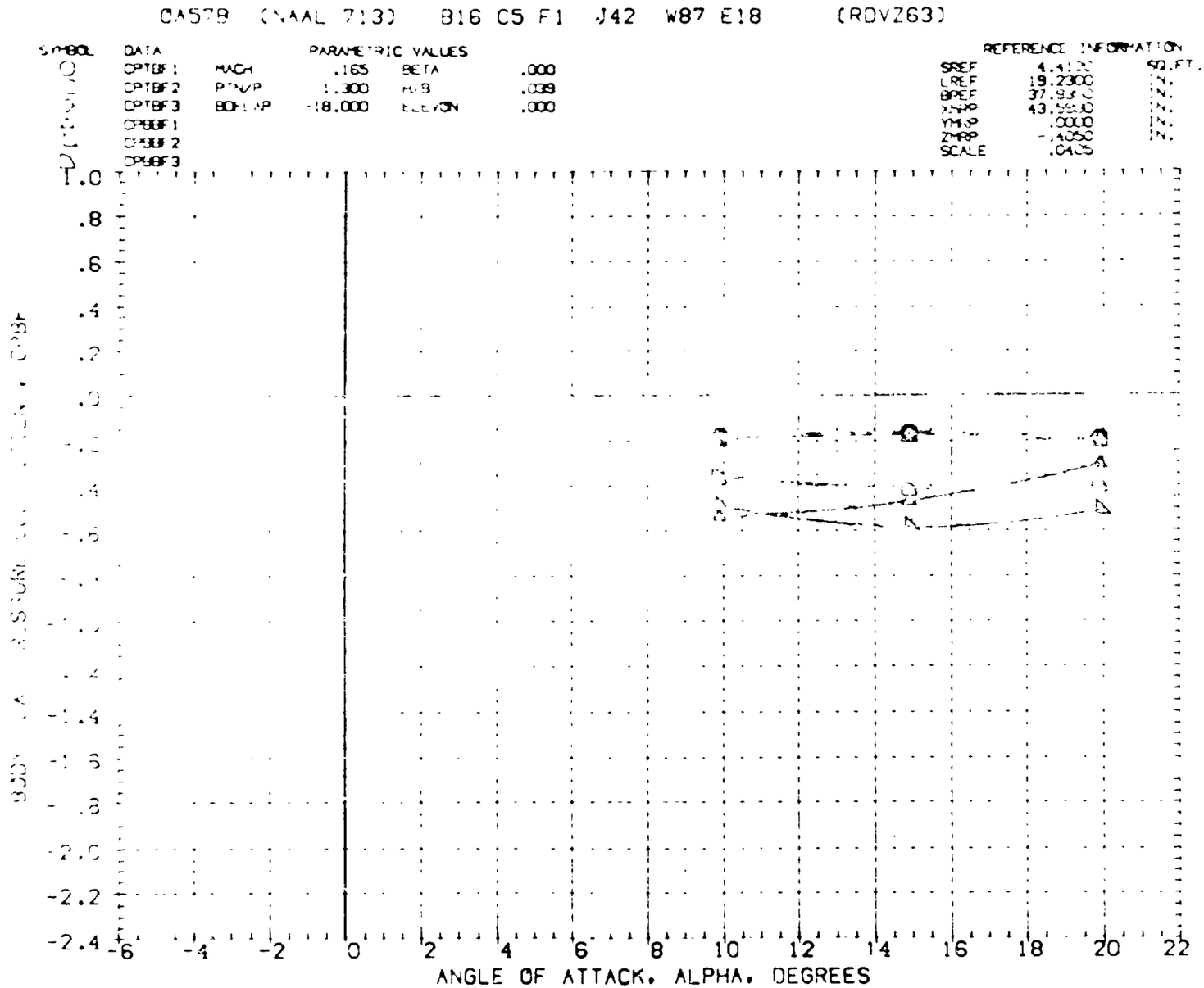


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BOFLAP

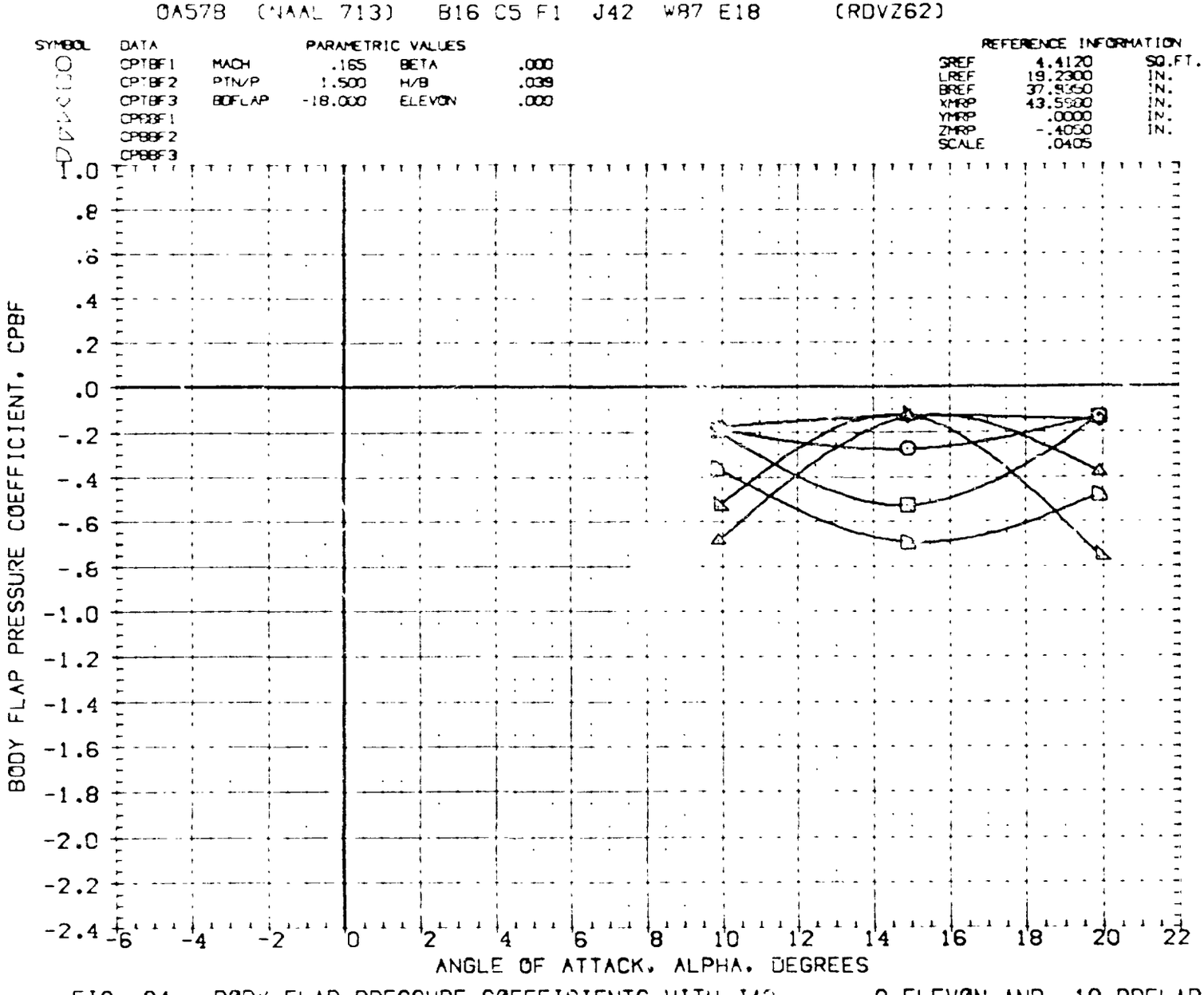


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

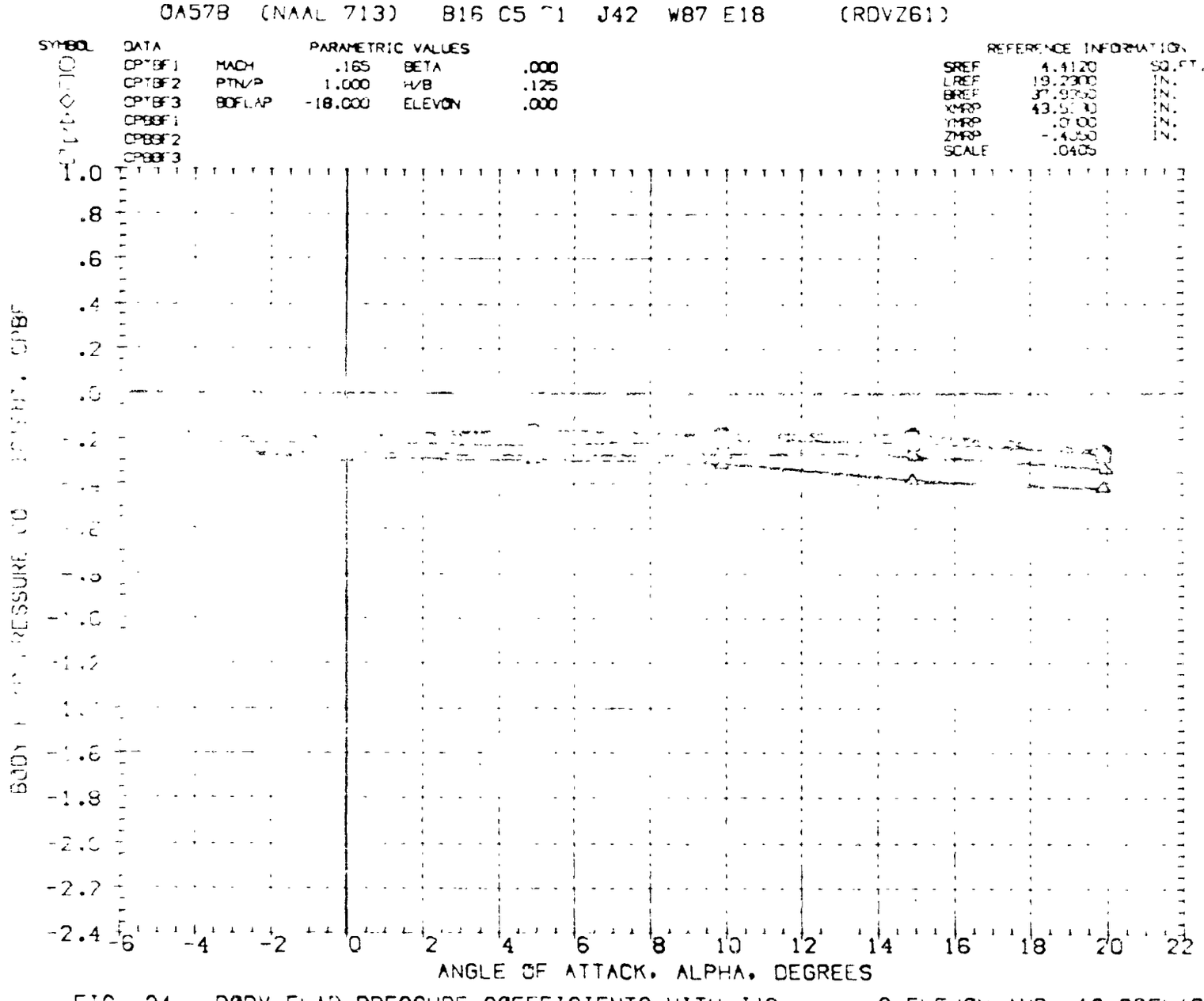


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

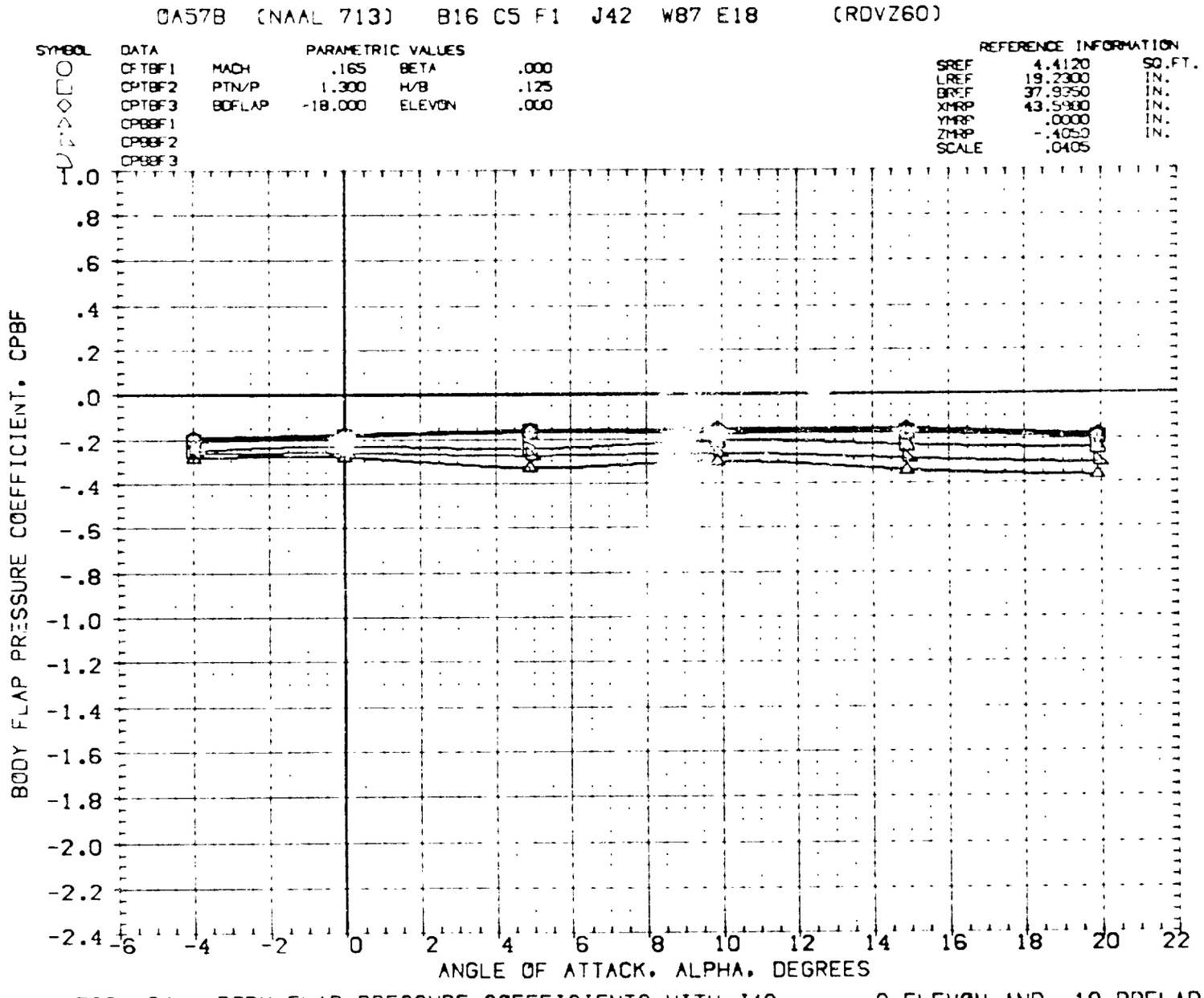


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

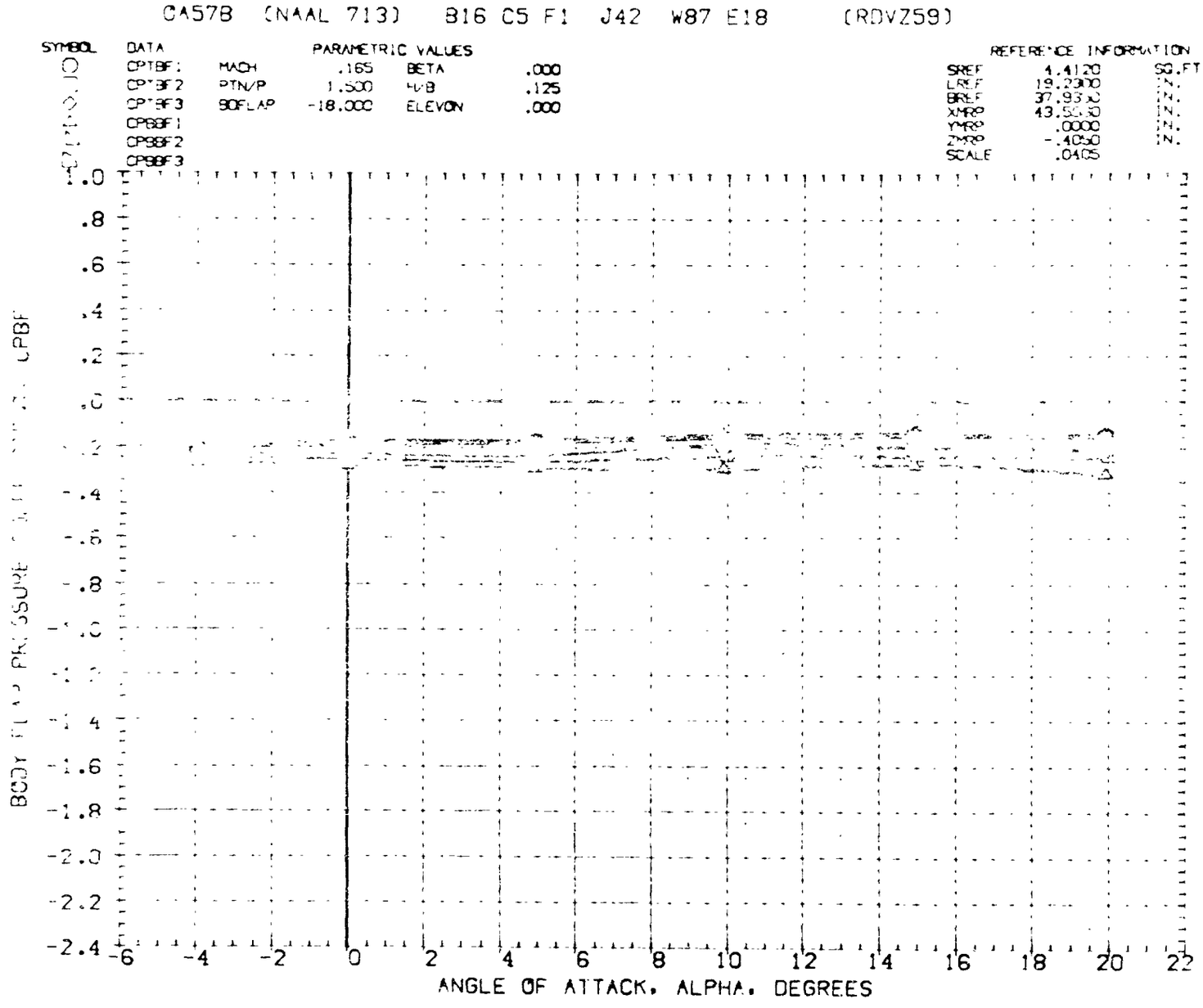


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 0 ELEVON AND -18 BDFLAP

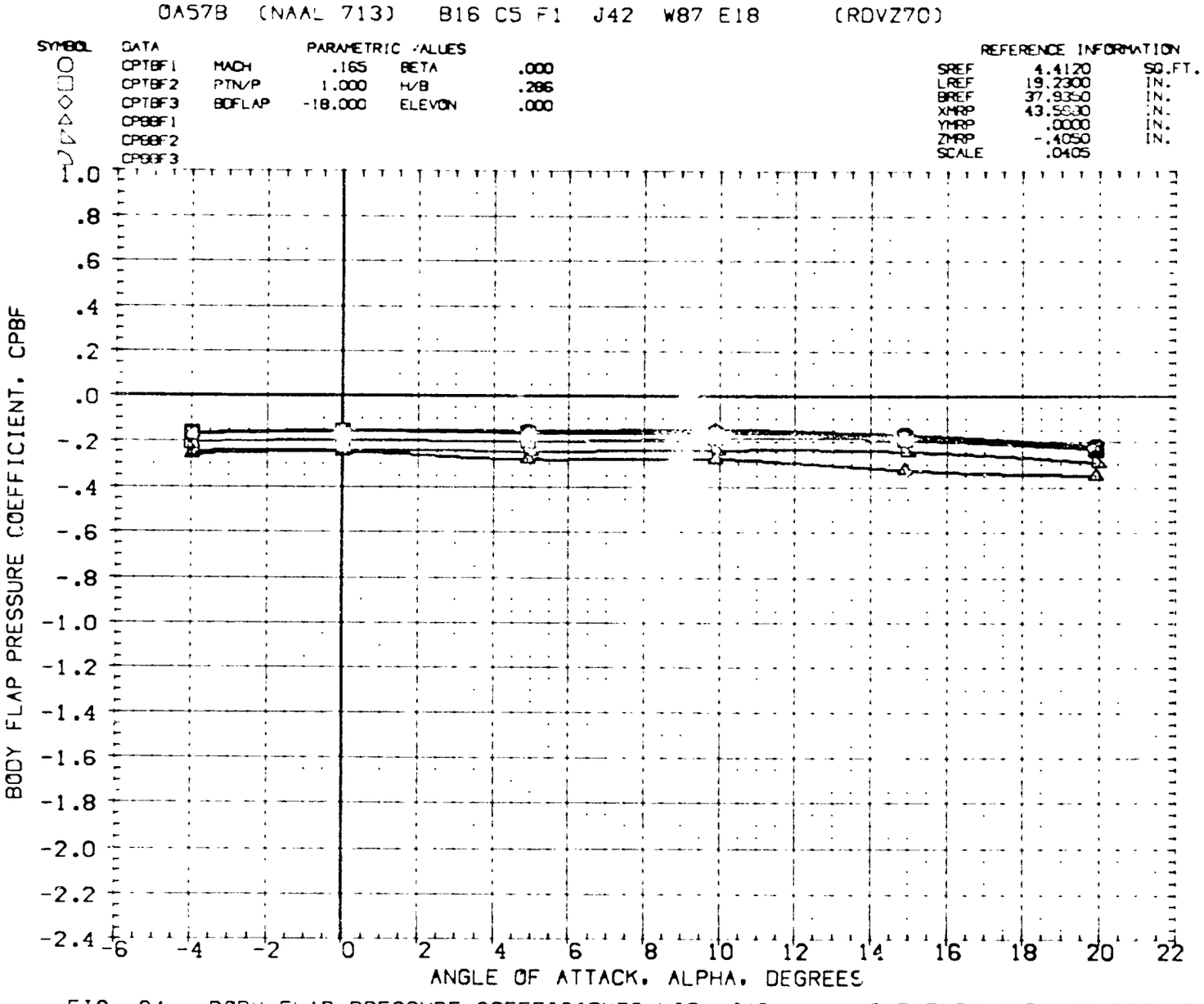


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

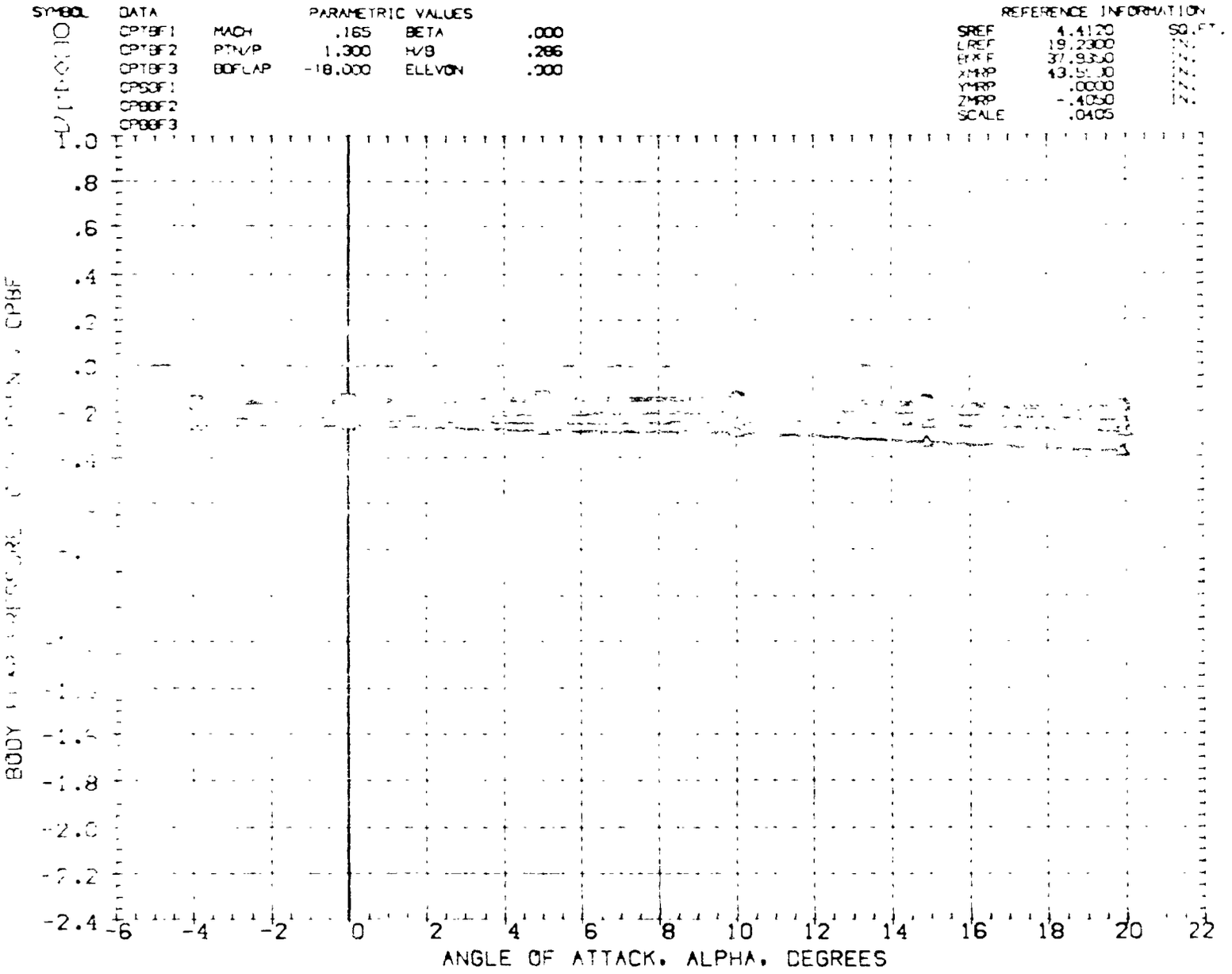


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BOFLAP

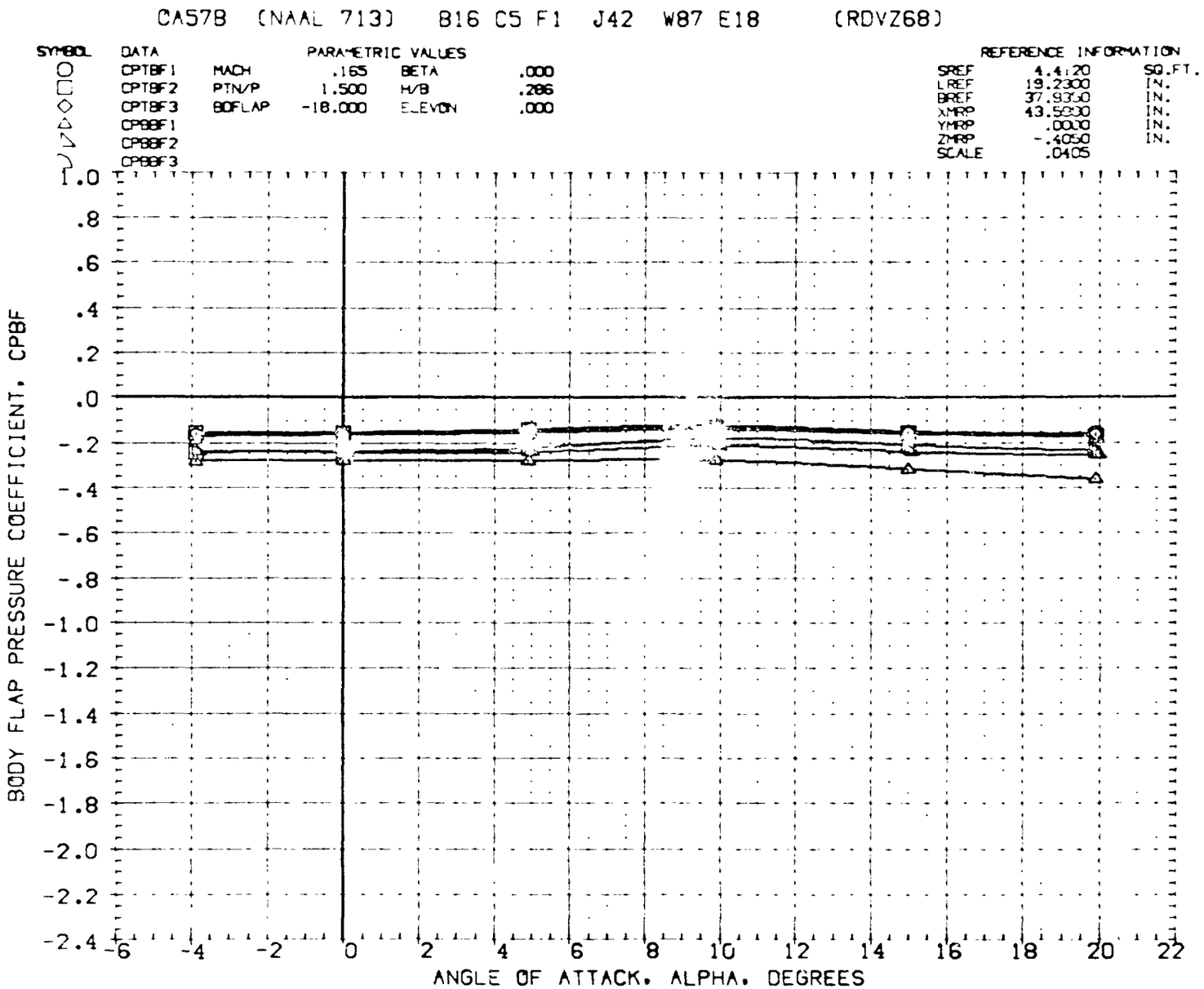


FIG. 24 BODY FLAP PRESSURE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(HCV042)	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	-15.000	.039	1.000	-18.000
(HCV041)	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	-15.000	.039	1.300	-18.000
(HCV040)	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	-15.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2900	IN.
BREF	37.9550	IN.
XMRP	43.5060	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

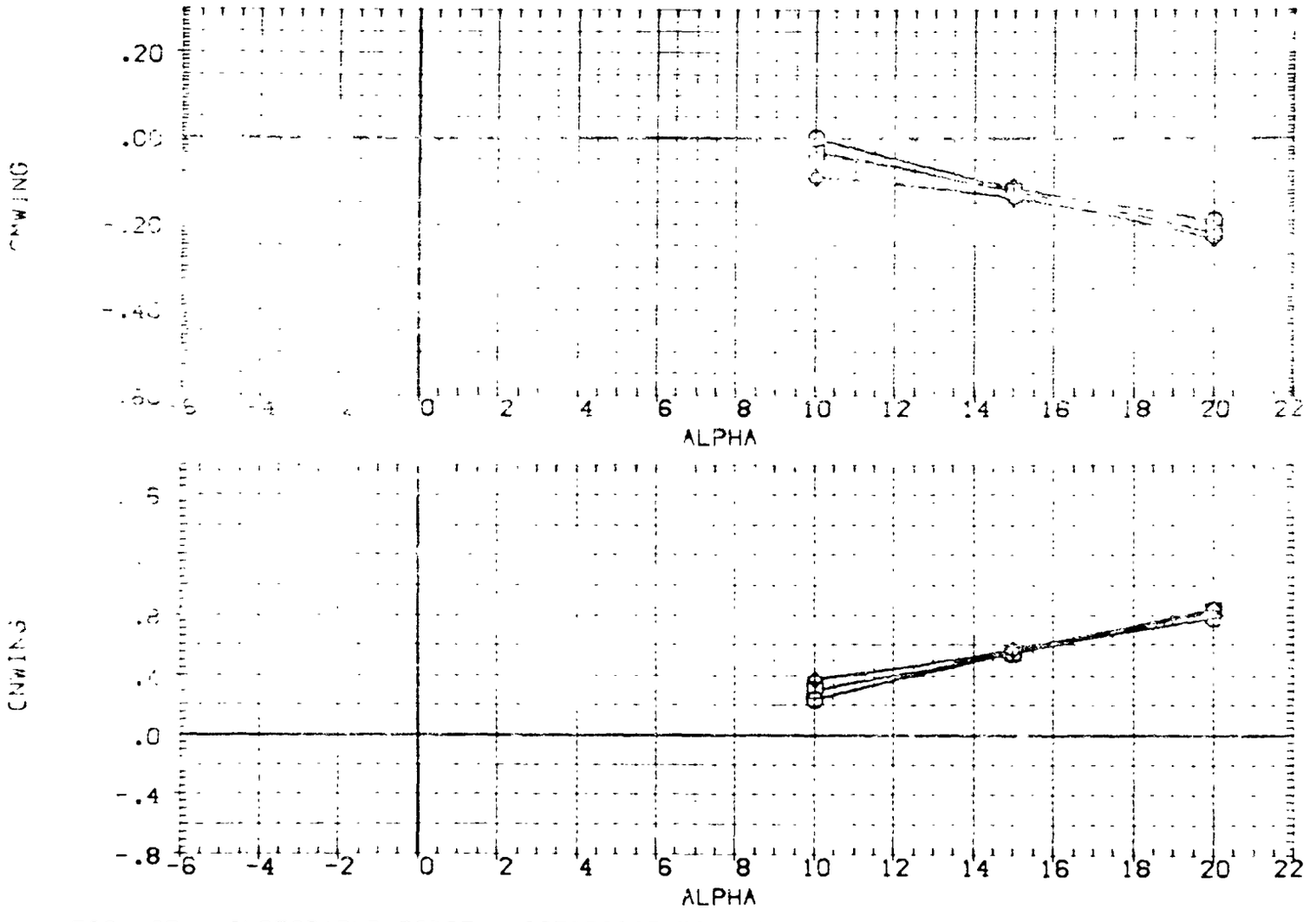


FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(HOV042)	○	0A578 (NAAL 713)	B16 C5 F1	J40	V87	E18		-15.000	.038	1.000	-18.000
(HOV041)	□	0A578 (NAAL 713)	B16 C5 F1	J40	V87	E18		-15.000	.039	1.300	-18.000
(HOV040)	◇	0A578 (NAAL 713)	B16 C5 F1	J40	V87	E18		-15.000	.040	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

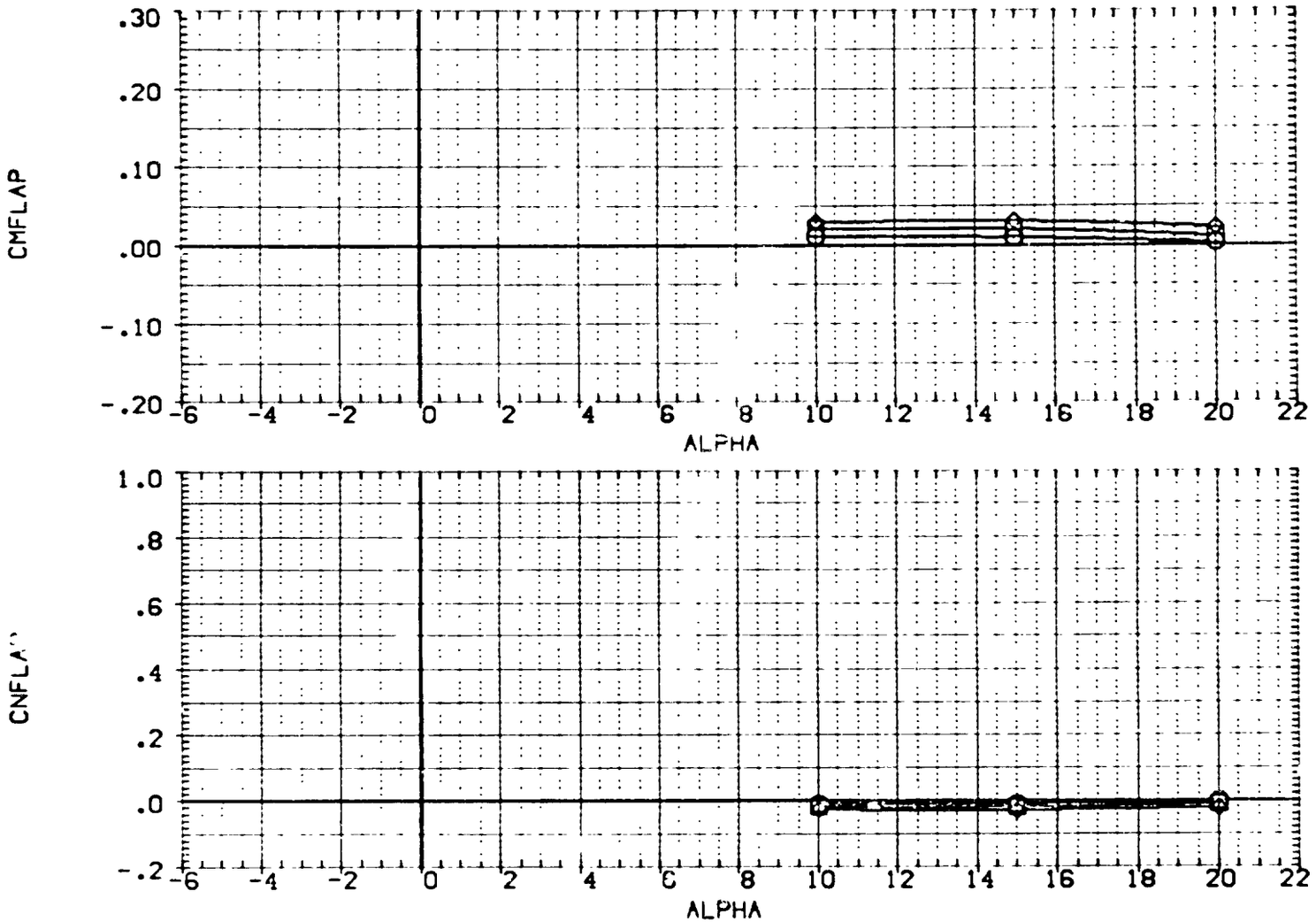


FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET SYMBOL		CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(HCV042)		0A57B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.039	1.000	-18.000
(HCV041)		0A57B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.039	1.300	-18.000
(HCV040)		0A57B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2750	IN.
BREF	37.9360	IN.
XMRP	43.5960	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

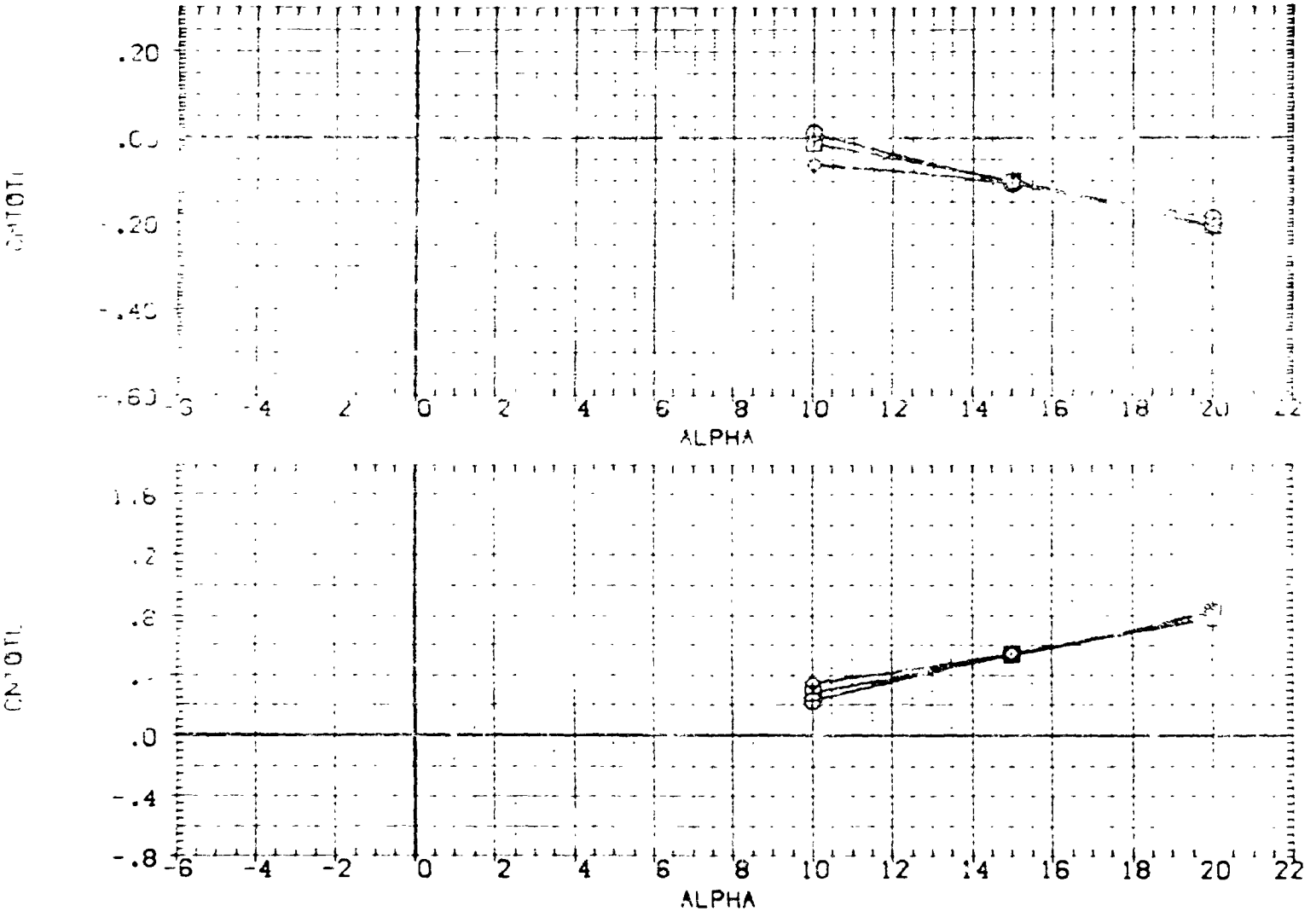


FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

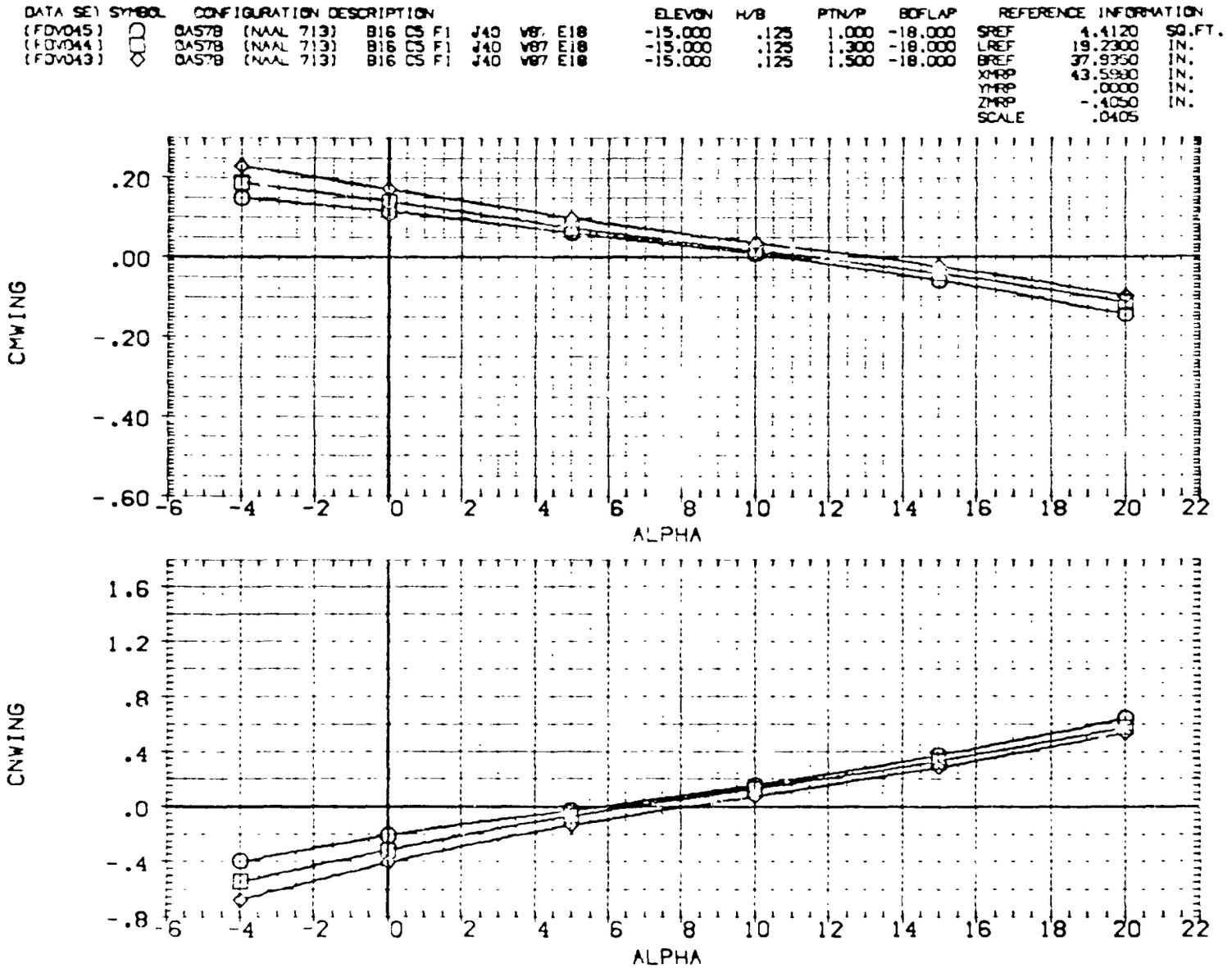


FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BOFLAP

(A)MACH - ...

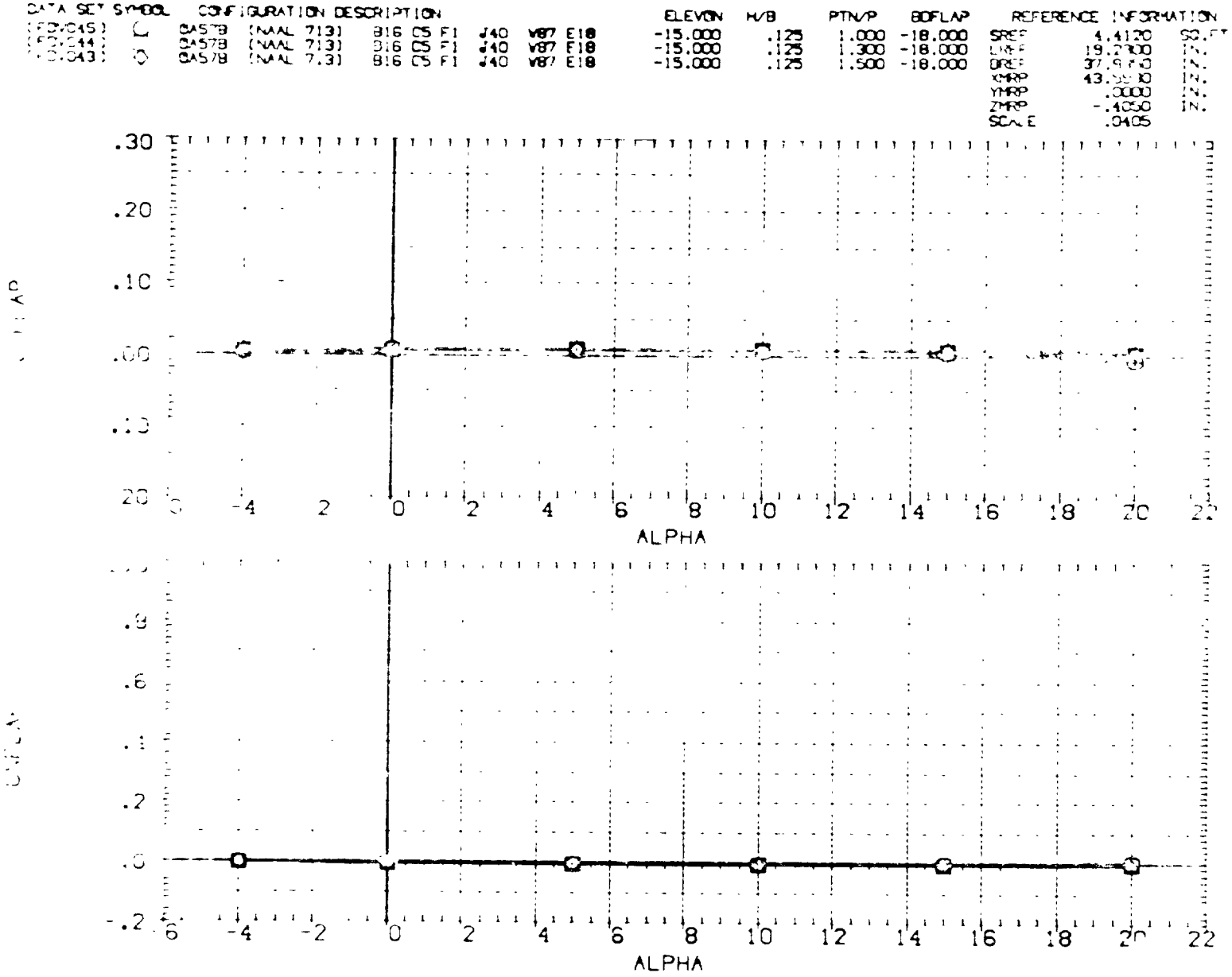


FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

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DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV045)	□	DAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.125	1.000	-18.000
(FDV044)	○	DAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.125	1.300	-18.000
(FDV043)	◇	DAS7B	(NAAL 713)	B16 C5 F1	J40	V87	E18	-15.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5900	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

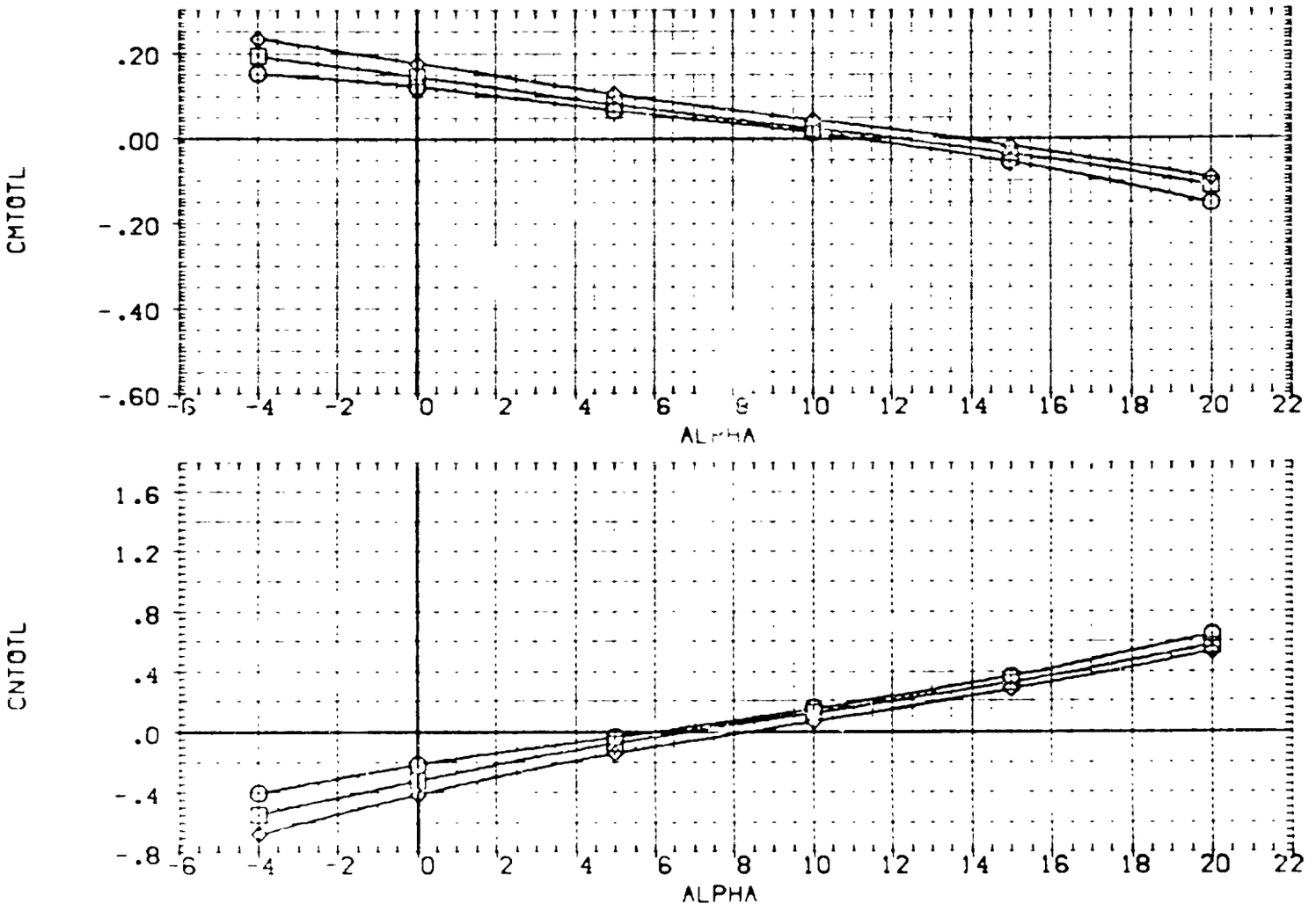

FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH =

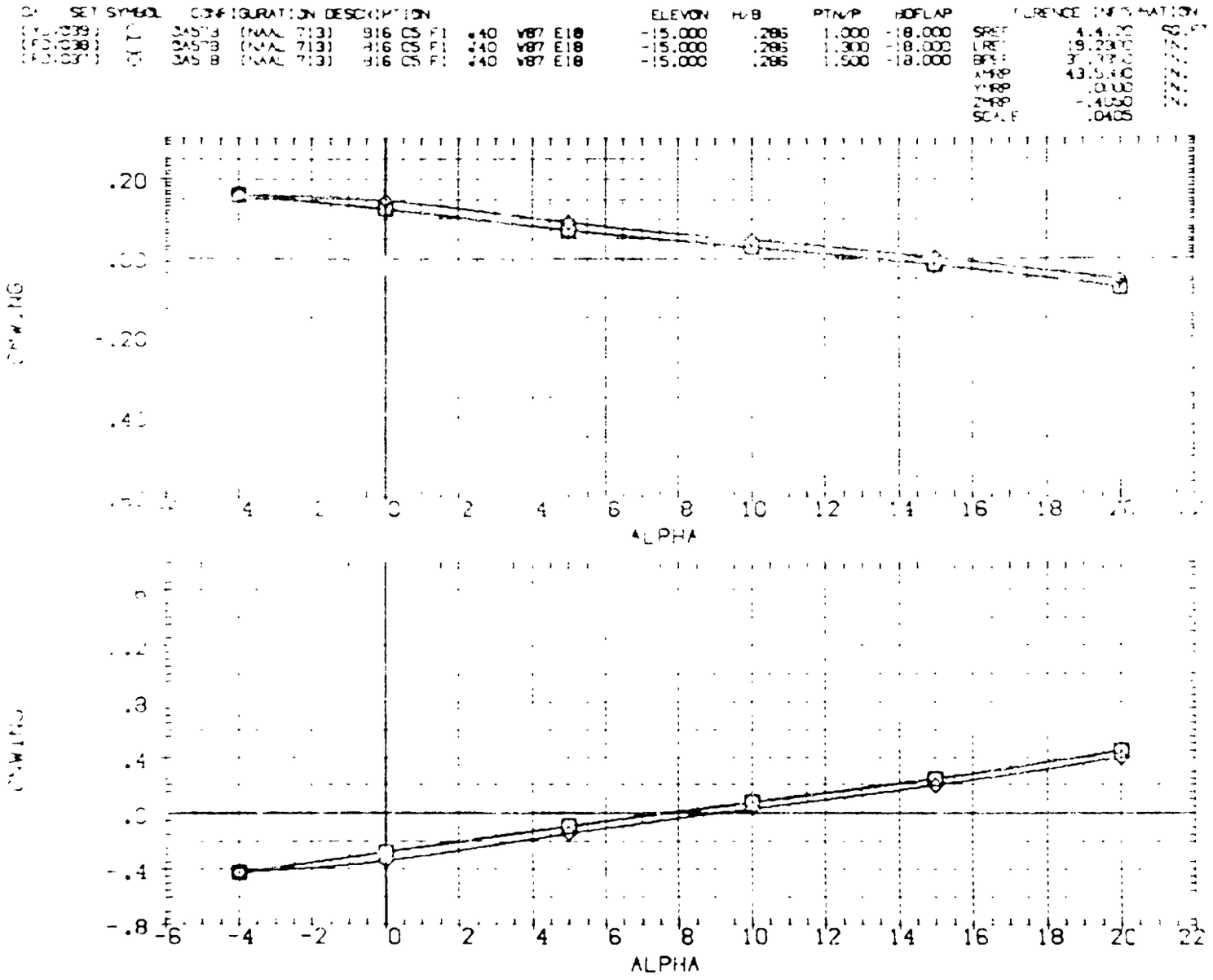

FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(FDV039)	○	OA57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	-15.000	.286	1.000	-18.000
(FDV038)	□	OA57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	-15.000	.286	1.300	-18.000
(FDV037)	◇	OA57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	-15.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.0360	IN.
XMRP	43.5300	IN.
YMRP	.0000	IN.
ZMRP	-.4060	IN.
SCALE	.0405	

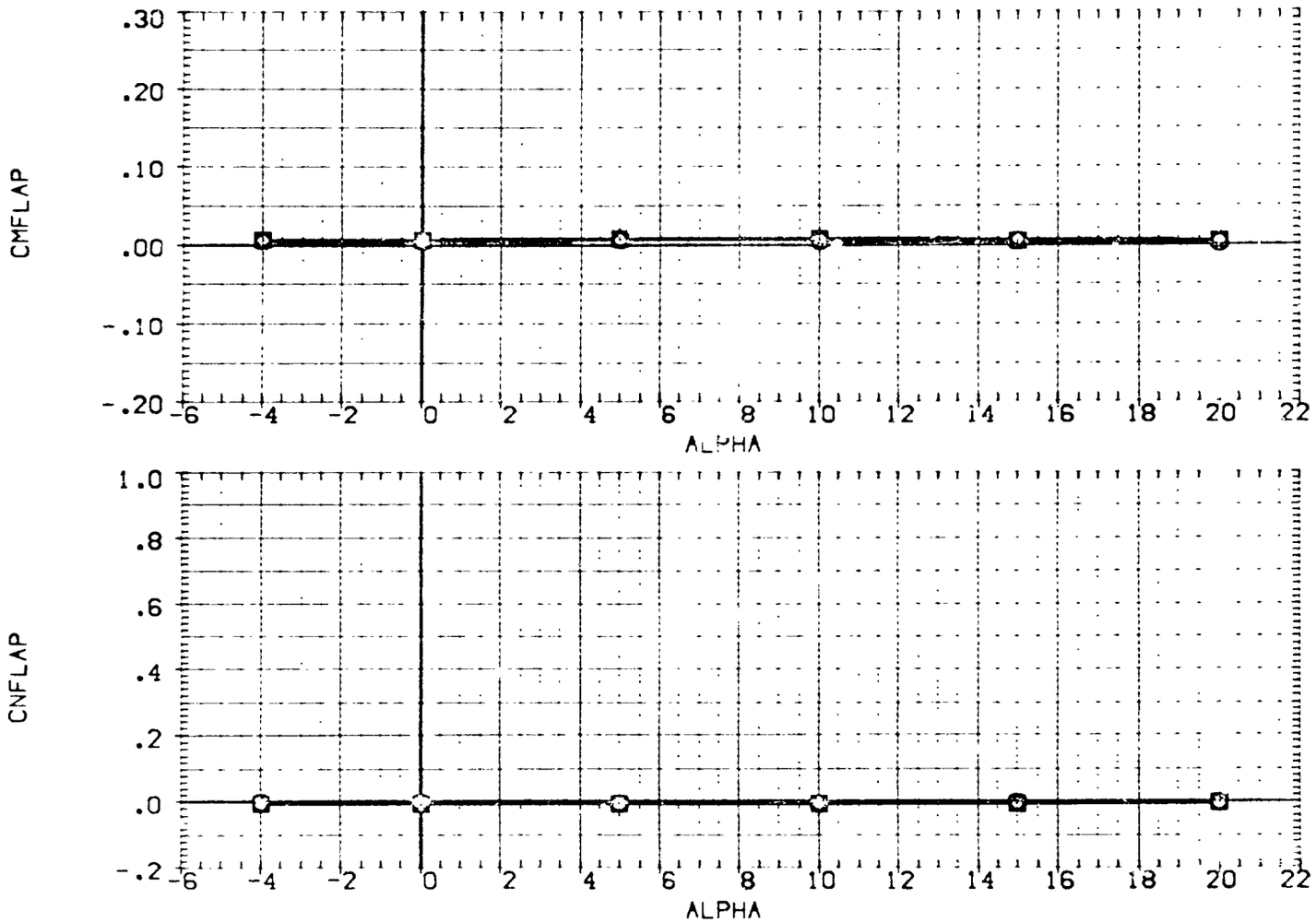

FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

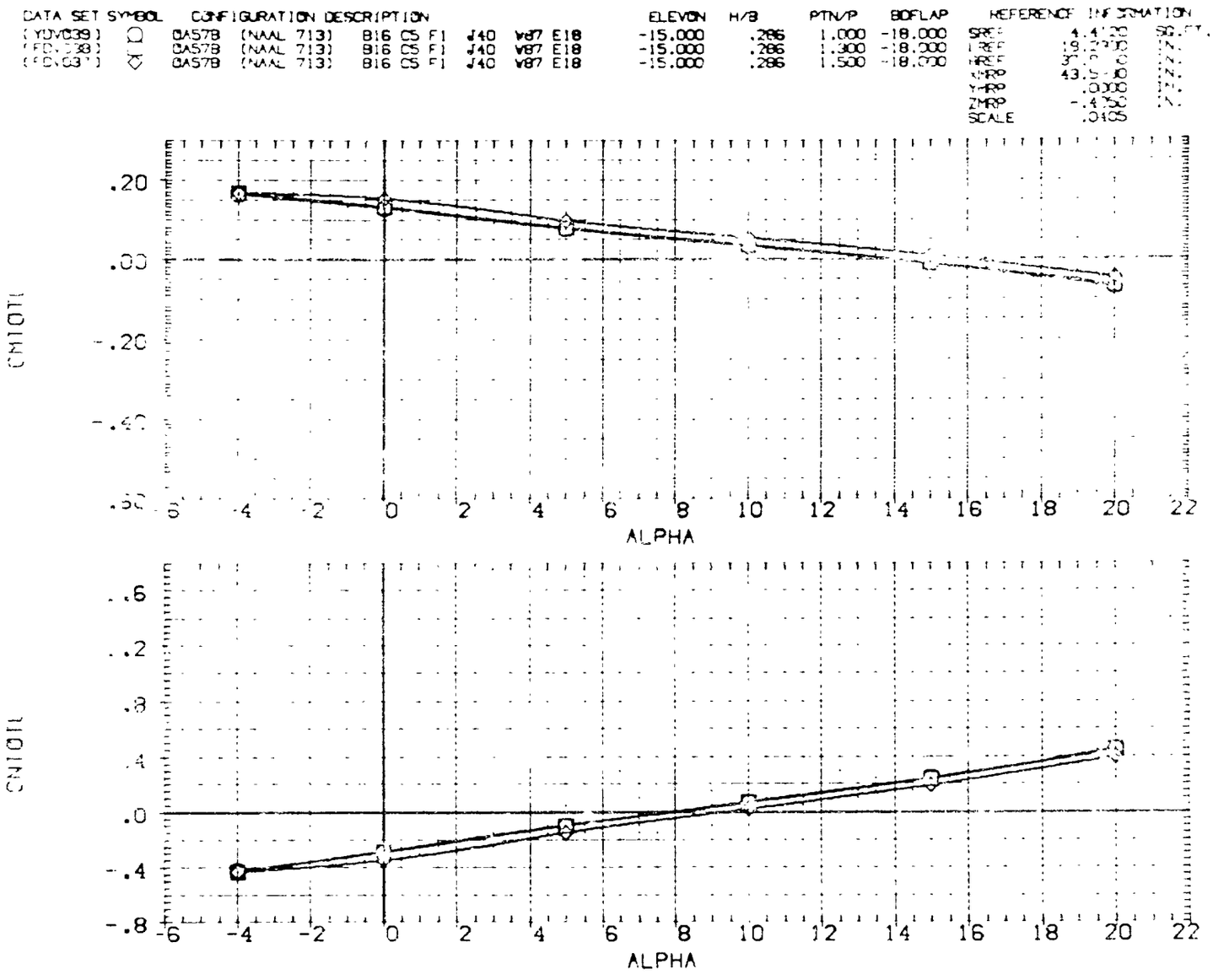

FIG. 25 INTEGRATED FORCE COEFFICIENTS WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(HOV003)	○	DA57B (NAAL 713)	B16 CS F1	J40	V87 E18		.000	.039	1.000	-18.000
(HOV004)	□	DA57B (NAAL 713)	B16 CS F1	J40	V87 E18		.000	.039	1.300	-18.000
(HOV005)	◇	DA57B (NAAL 713)	B16 CS F1	J40	V87 E18		.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9300	IN.
XMRP	43.5930	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

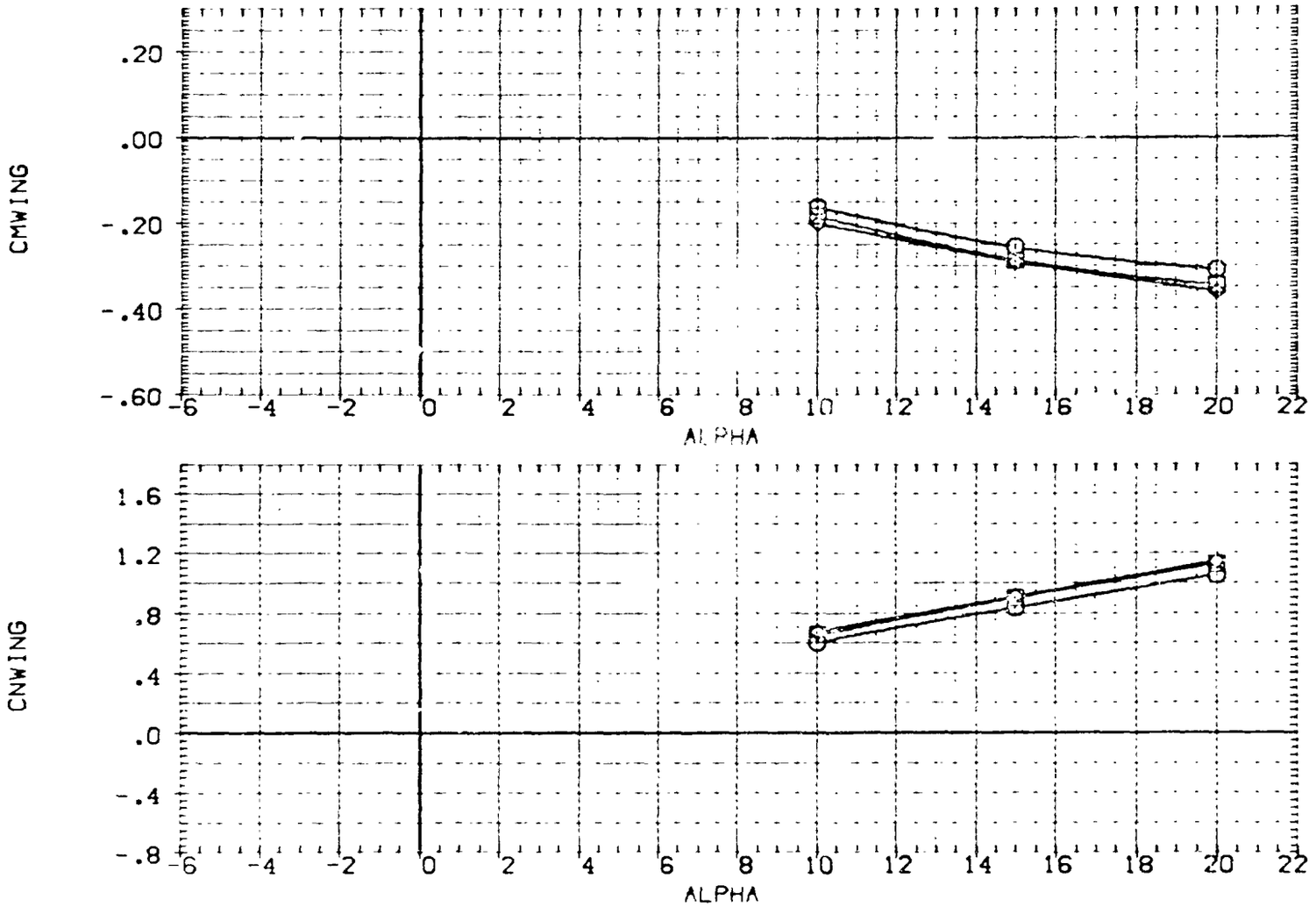

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

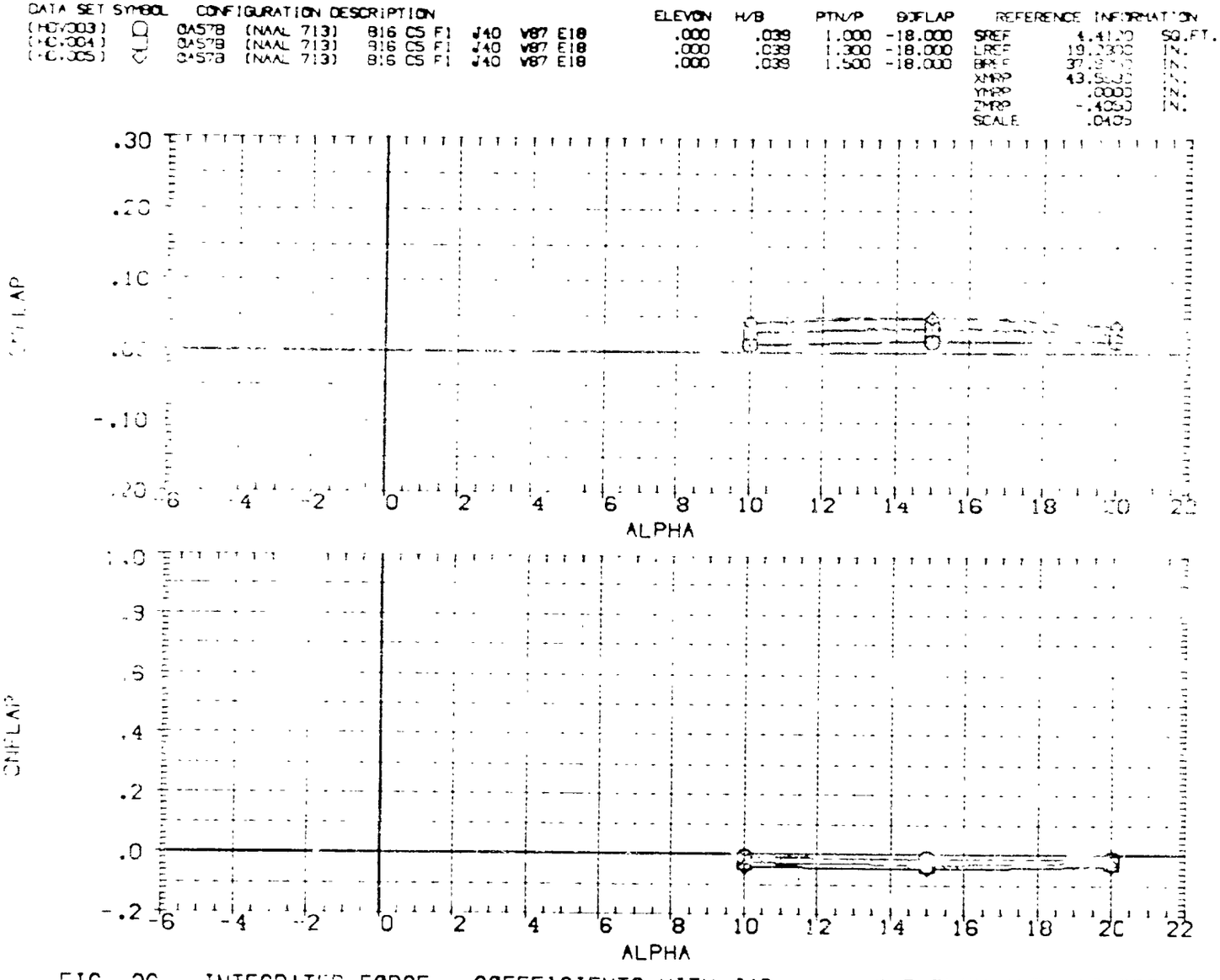

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(HDV003)	○	0AS7B	(NAAL 713)	B16 CS F1	J40	W87	E18	.000	.039	1.000	-18.000
(HDV004)	□	0AS7B	(NAAL 713)	B16 CS F1	J40	W87	E18	.000	.039	1.300	-18.000
(HDV005)	◇	0AS7B	(NAAL 713)	B16 CS F1	J40	W87	E18	.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

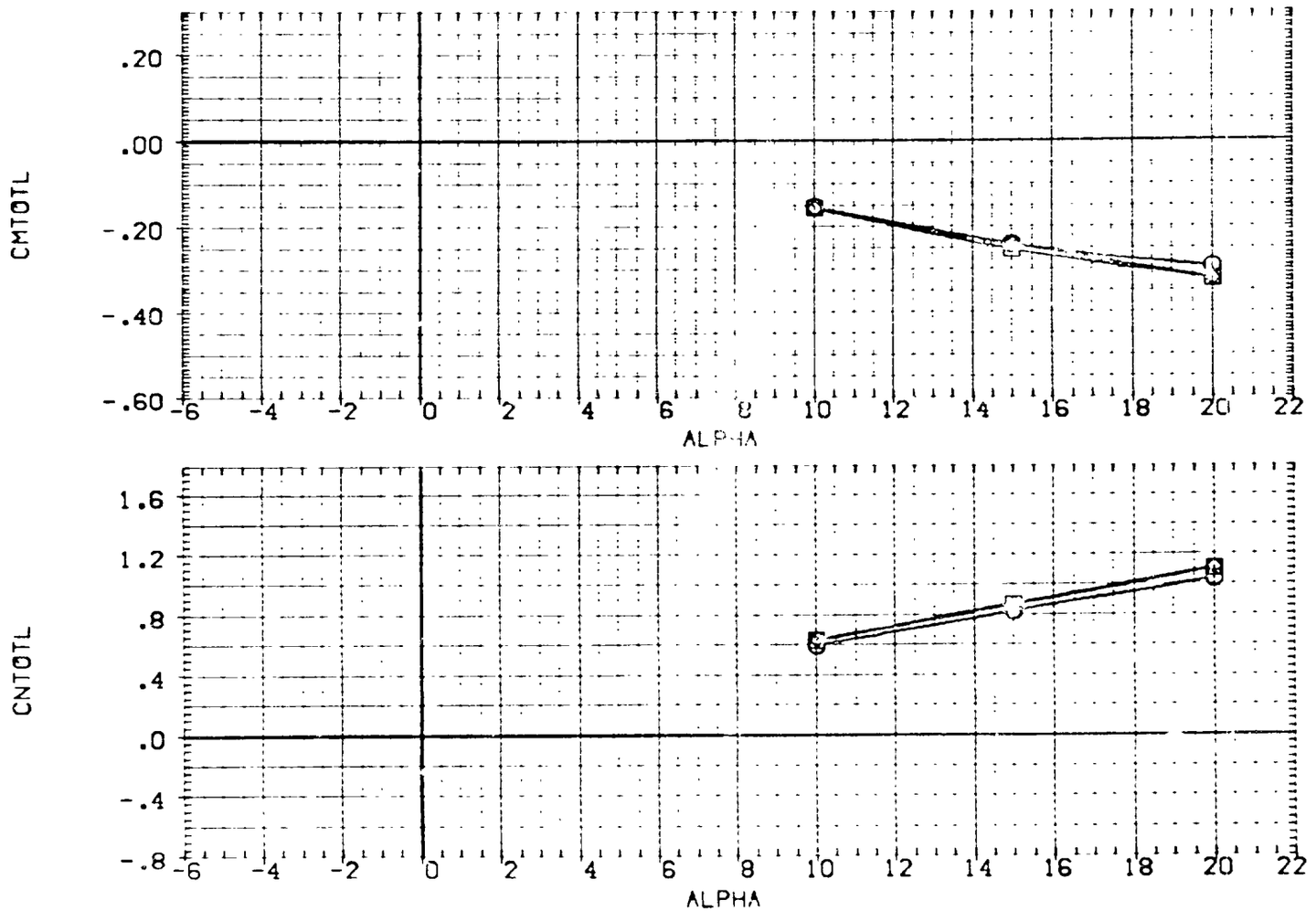

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

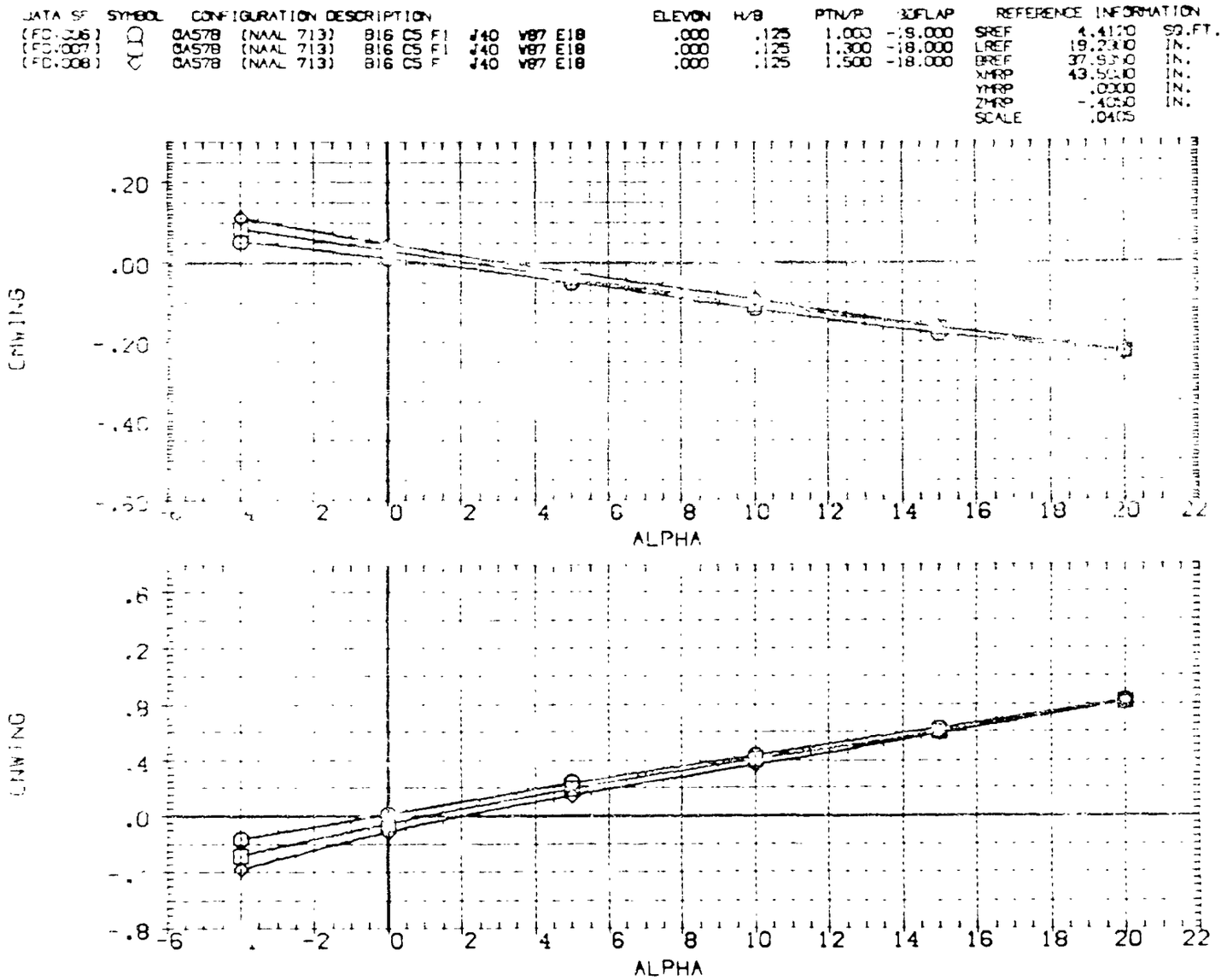

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV006)	□	0A578 (NAAL 713) B16 C5 F1 J40 W87 E18	.000	.125	1.000	-18.000
(FDV007)	◇	0A578 (NAAL 713) B16 C5 F1 J40 W87 E18	.000	.125	1.300	-18.000
(FDV008)	◇	0A578 (NAAL 713) B16 C5 F1 J40 W87 E18	.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

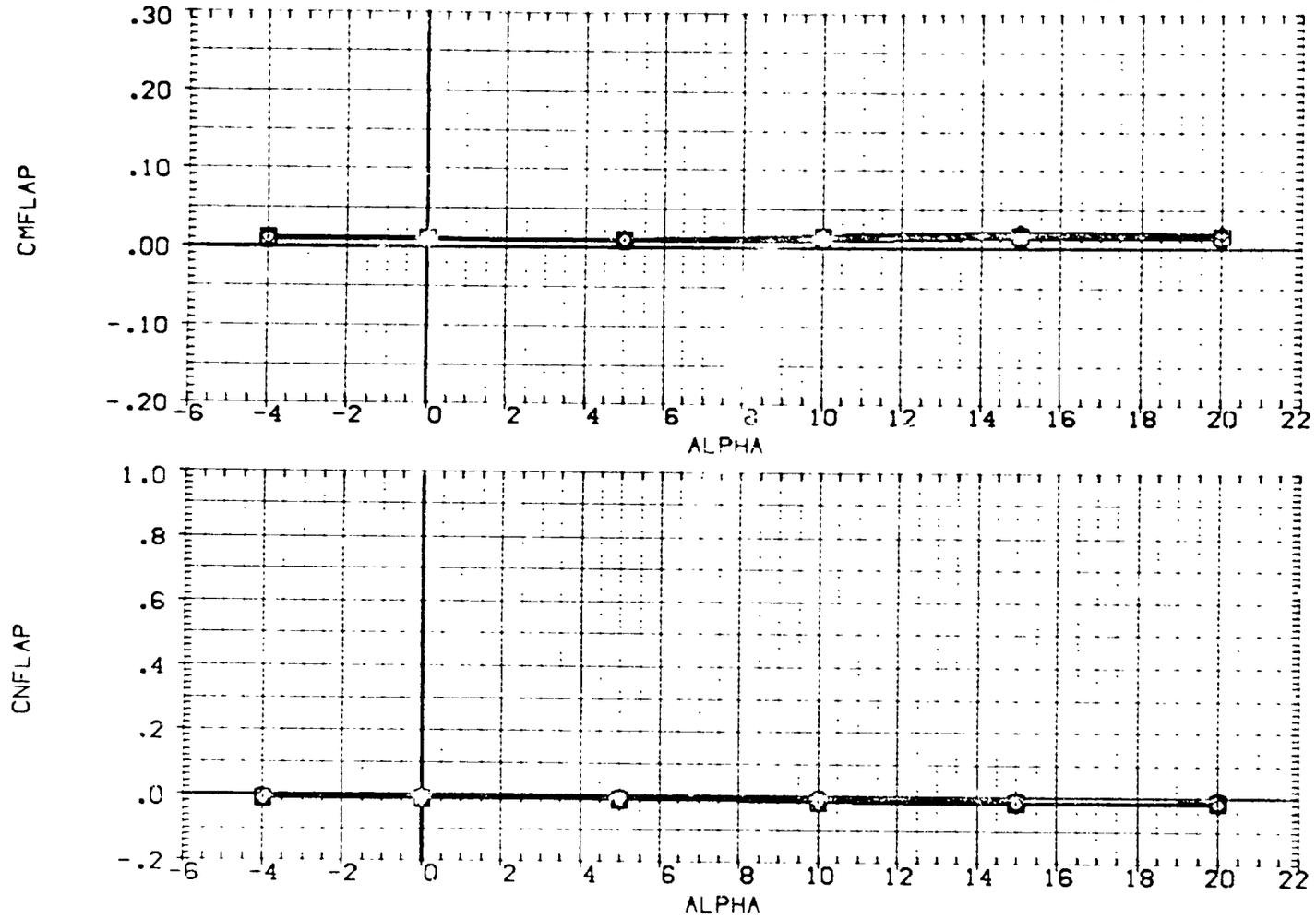

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MAC= = .2

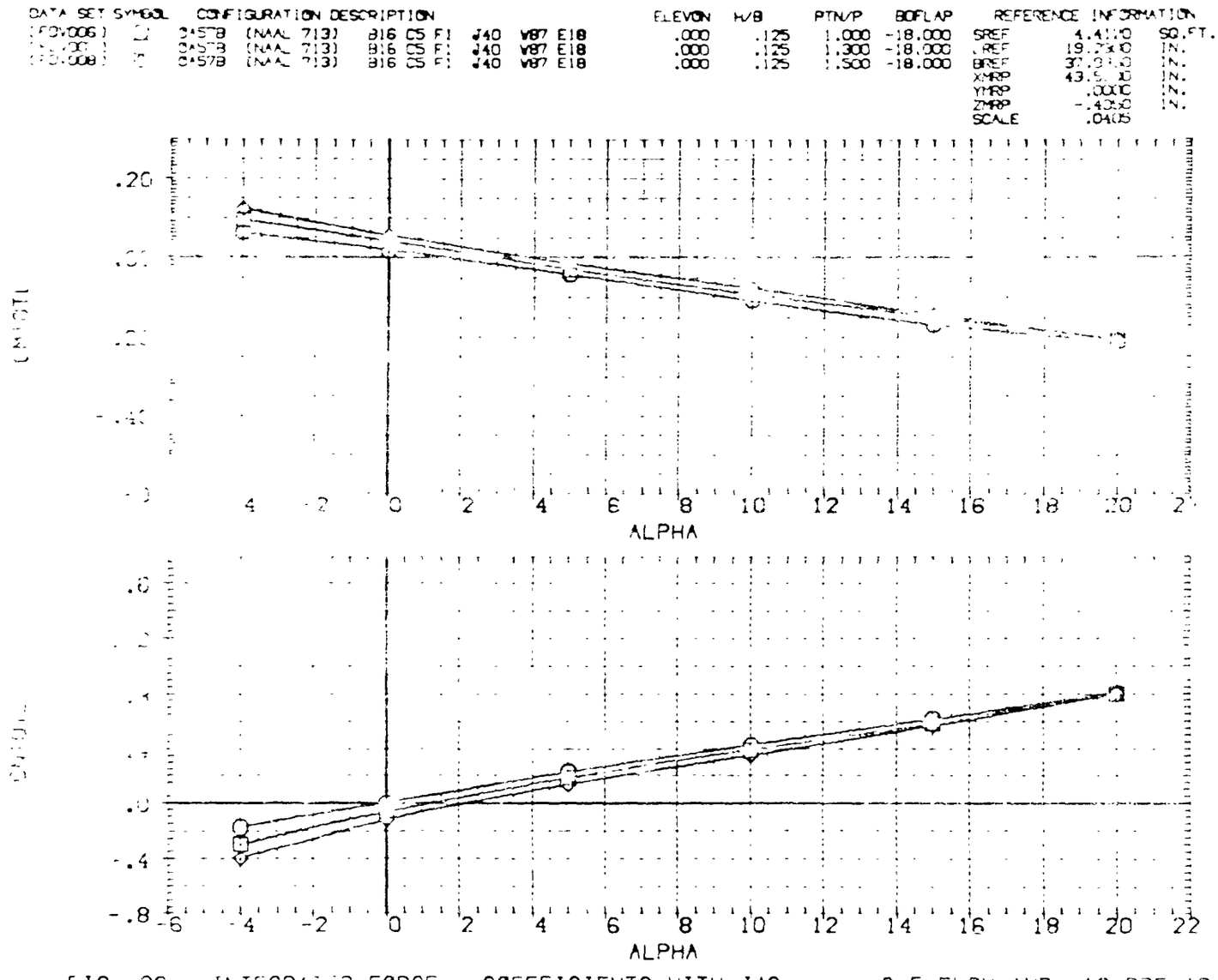

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .25

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(FDV015)	○	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.000	-18.000
(FDV017)	□	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.300	-18.000
(FDV016)	◇	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.412C	SQ FT.
LREF	19.230C	IN.
BREF	37.936C	IN.
XMRP	43.593C	IN.
YMRP	.000C	IN.
ZMRP	-.405C	IN.
SCALE	.040E	

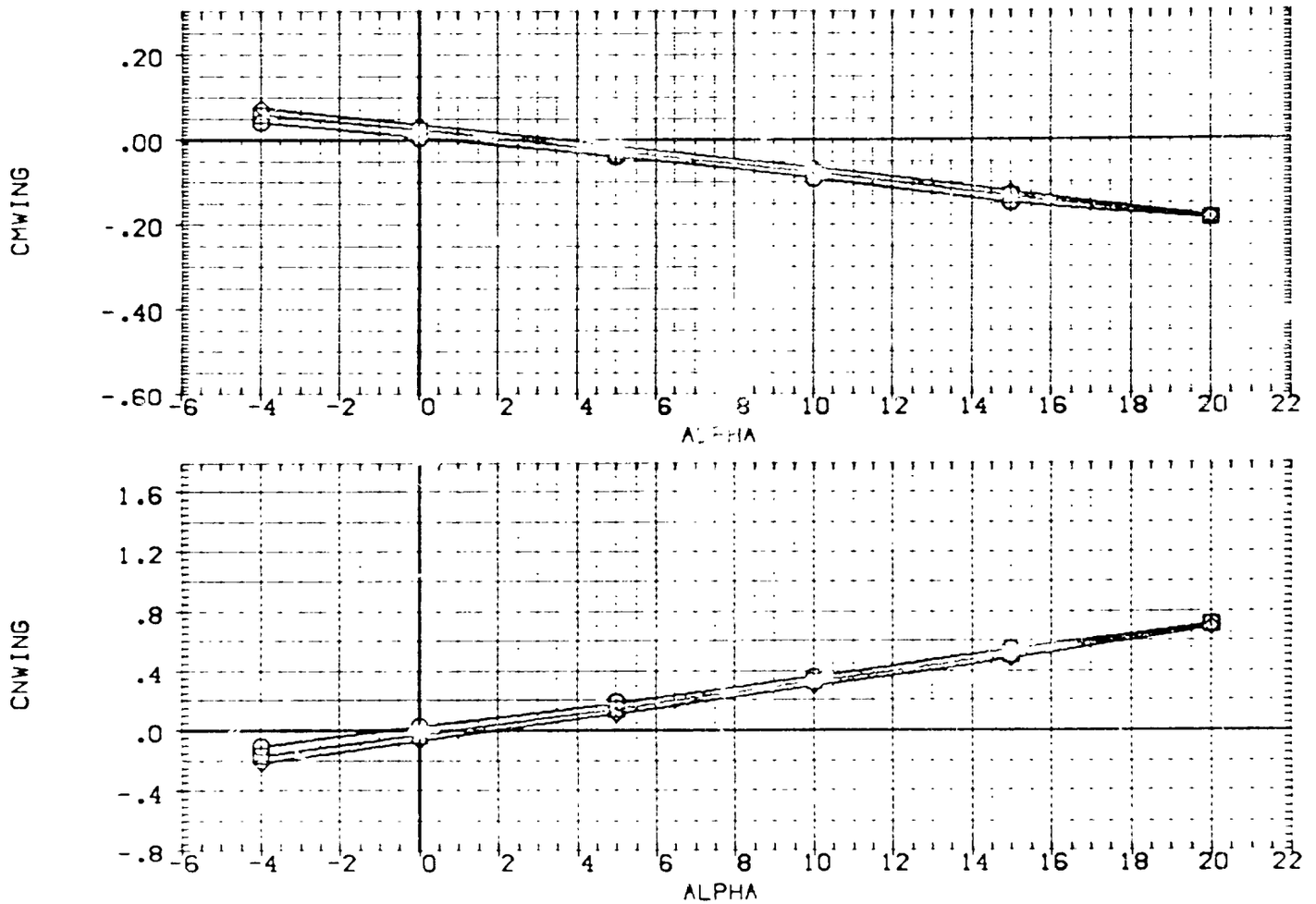

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	P/V/P	BDFLAP
(FDN015)	○	0A57B	(NAAL 713)	316 CS F1	J40	V87 E18		.000	.286	1.000	-18.000
(FDN017)	□	0A57B	(NAAL 713)	316 CS F1	J40	V87 E18		.000	.286	1.300	-18.000
(FDN016)	◇	0A57B	(NAAL 713)	316 CS F1	J40	V87 E18		.000	.286	1.500	-18.000

REFERENCE INFORMATION

SREF	4.4120	SQ.FT.
LREF	19.1300	IN.
BREF	3.[illegible]	IN.
XMRP	43.[illegible]	IN.
YMRP	.0000	IN.
ZMRP	-.4000	IN.
SCALE	.0405	

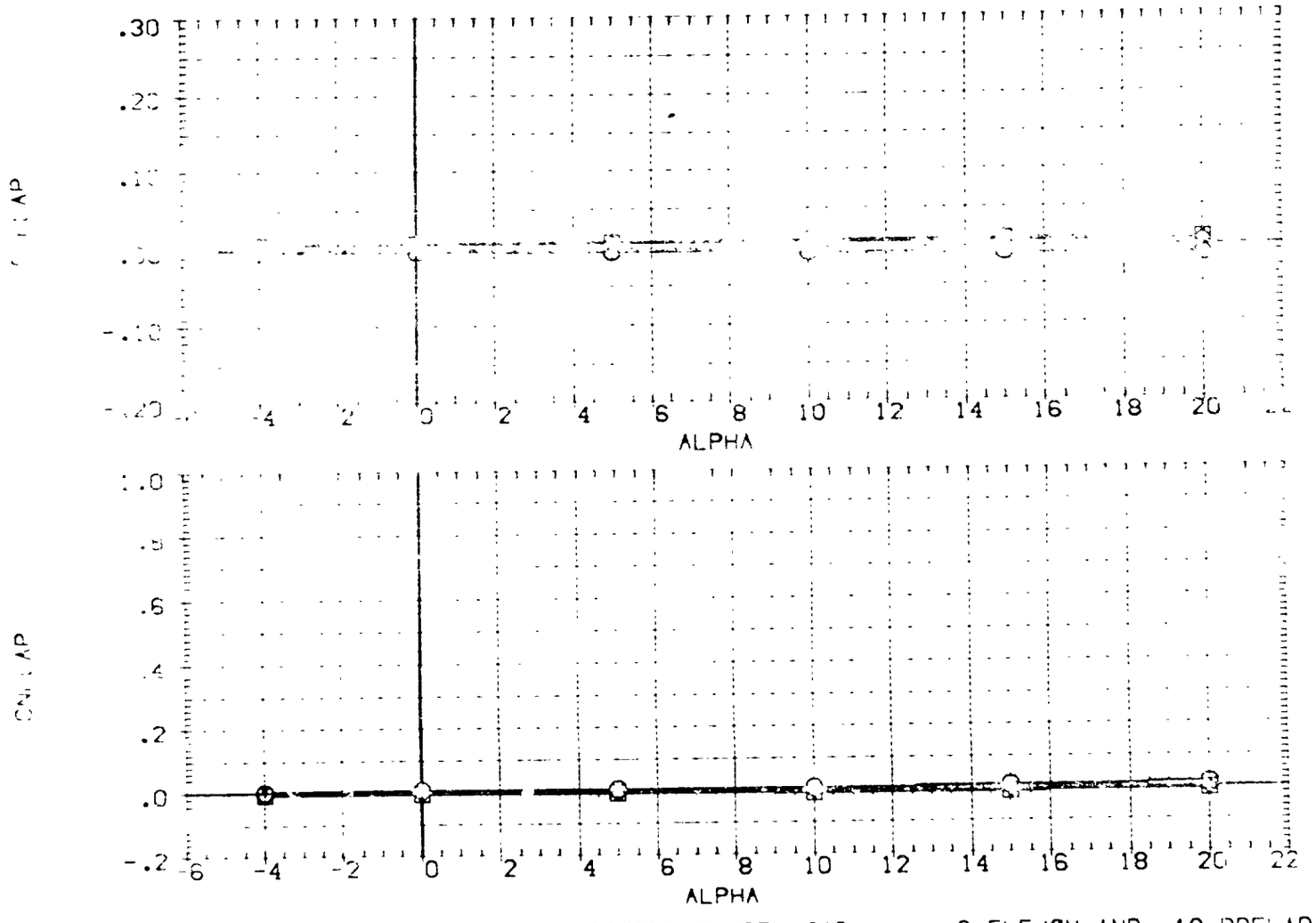

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A) MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV015)	○	0A57B	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.000	-18.000
(FDV017)	□	0A57B	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.300	-18.000
(FDV016)	◇	0A57B	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

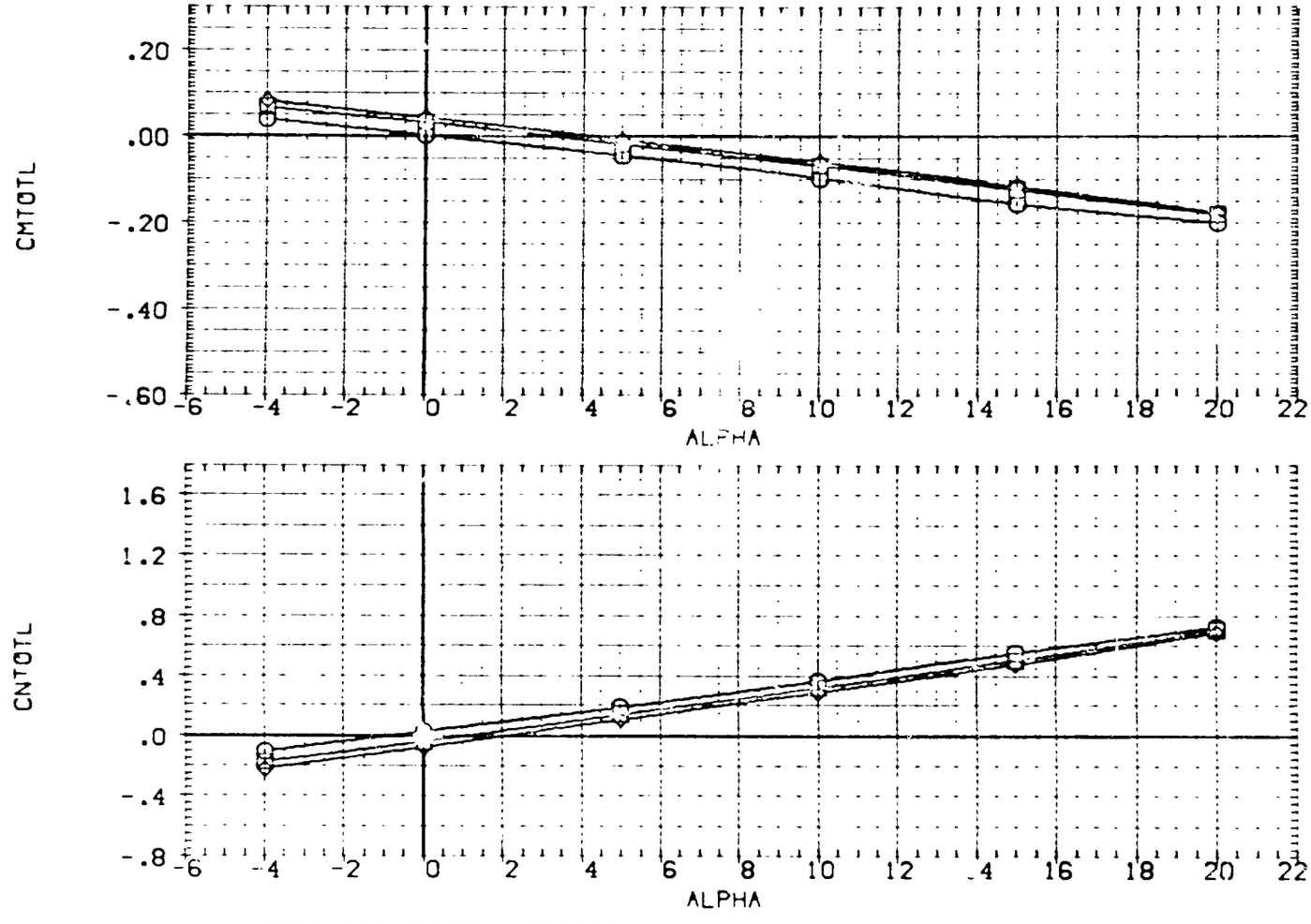

FIG. 26 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH =

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP	REFERENCE INFORMATION
(FD-0111)	□	0A57B (NAAL 713) 316 05 F1 J40 V87 E18	.000	.125	1.000	.000	SREF 4.41[illegible] SQ.FT.
(FD-0103)	○	0A57B (NAAL 713) 316 05 F1 J40 V87 E18	.000	.125	1.300	.000	LREF 19.[illegible]
(FD-0091)	△	0A57B (NAAL 713) 316 05 F1 J40 V87 E18	.000	.125	1.500	.000	SREF [illegible]
							XMRP 43.[illegible]
							YMRP .0000
							ZMRP -.1[illegible]
							SCALE .040

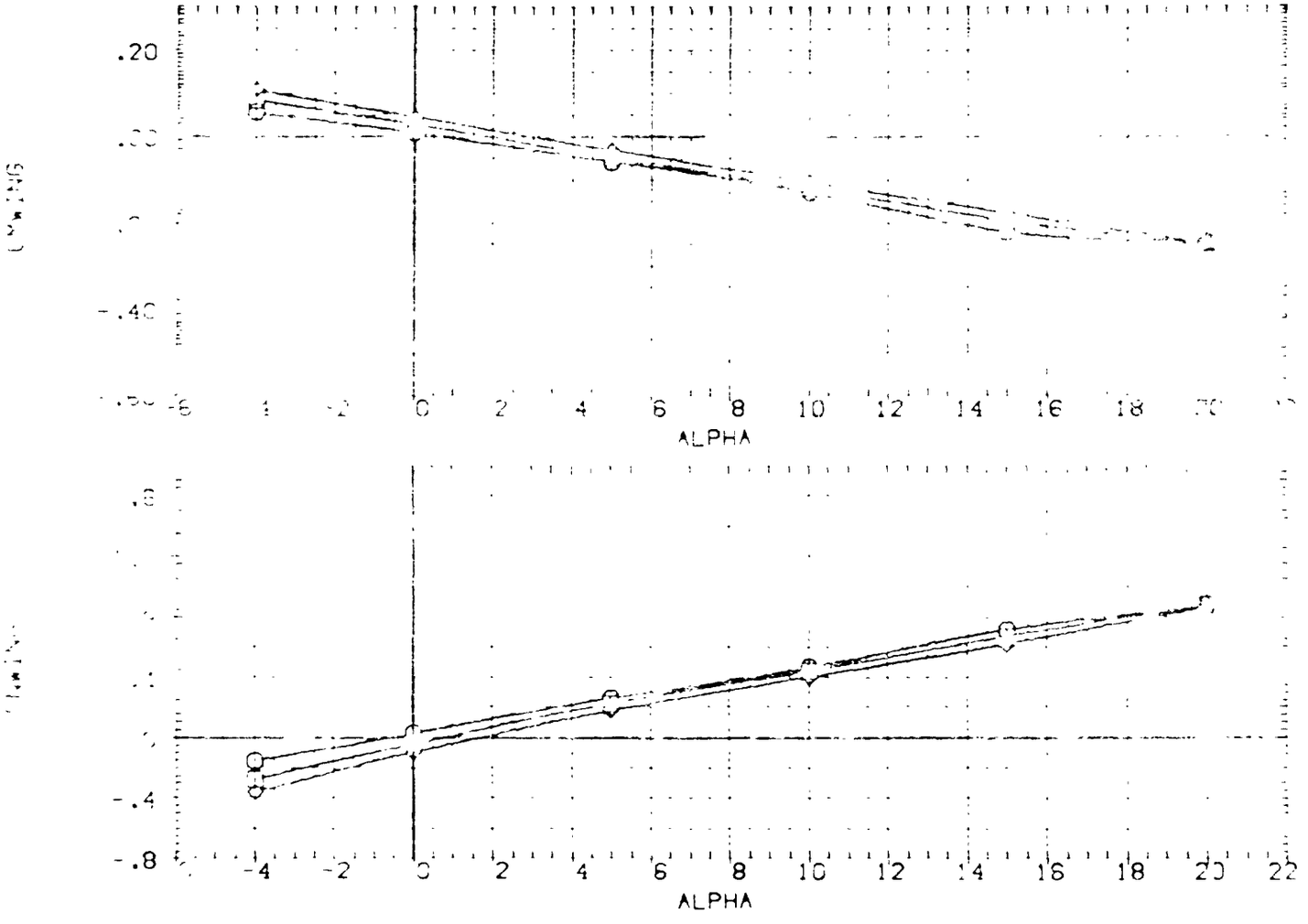

FIG. 27 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(F0.000)	□	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.125	1.000	.000
(F0.000)	○	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.125	1.300	.000
(F0.009)	◇	0A57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.125	1.500	.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9300	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

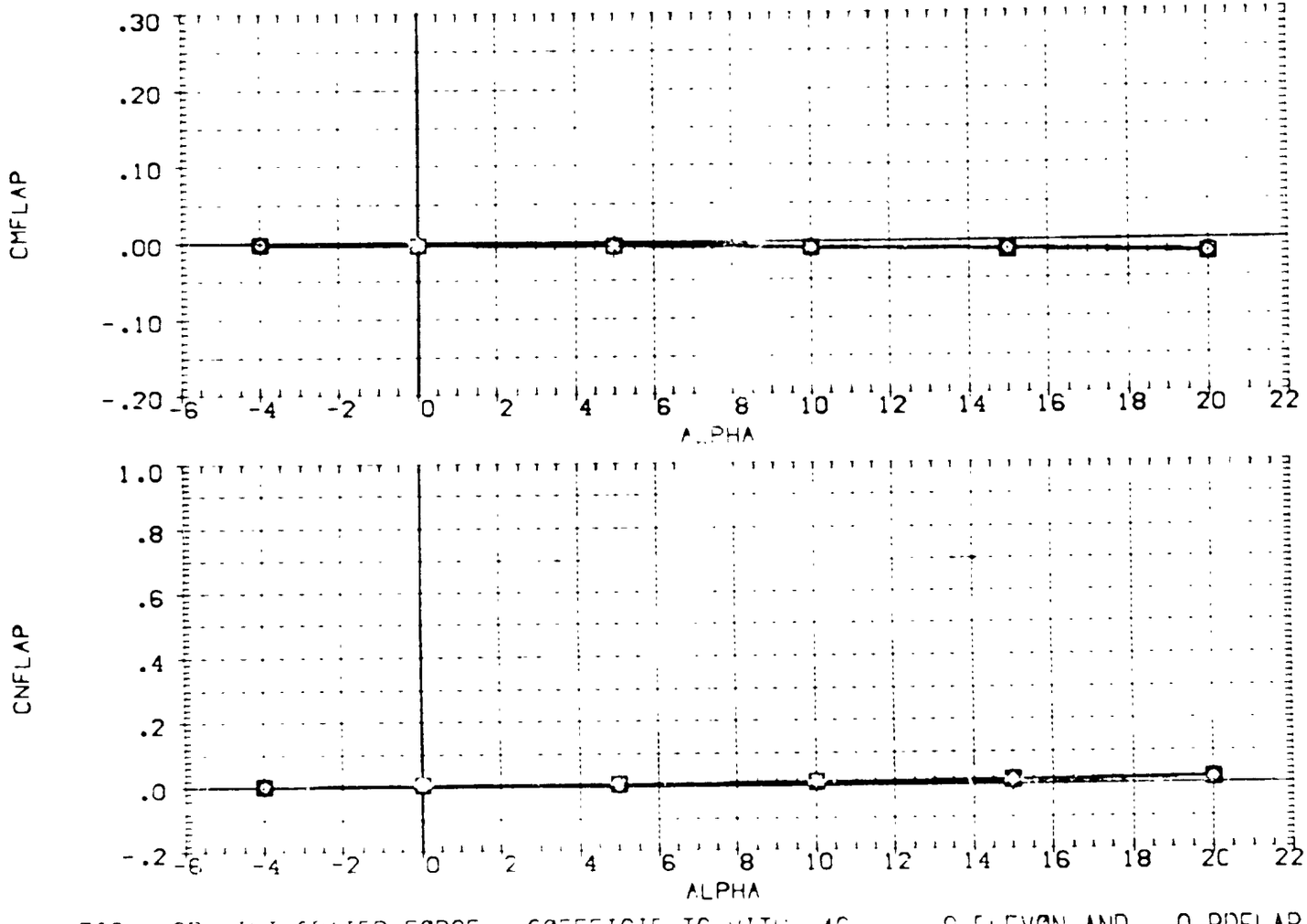

FIG. 2[illegible] INTEGRATED FORCE COEFFICIENTS WITH J40, 0 ELEVON AND 0 BDFLAP

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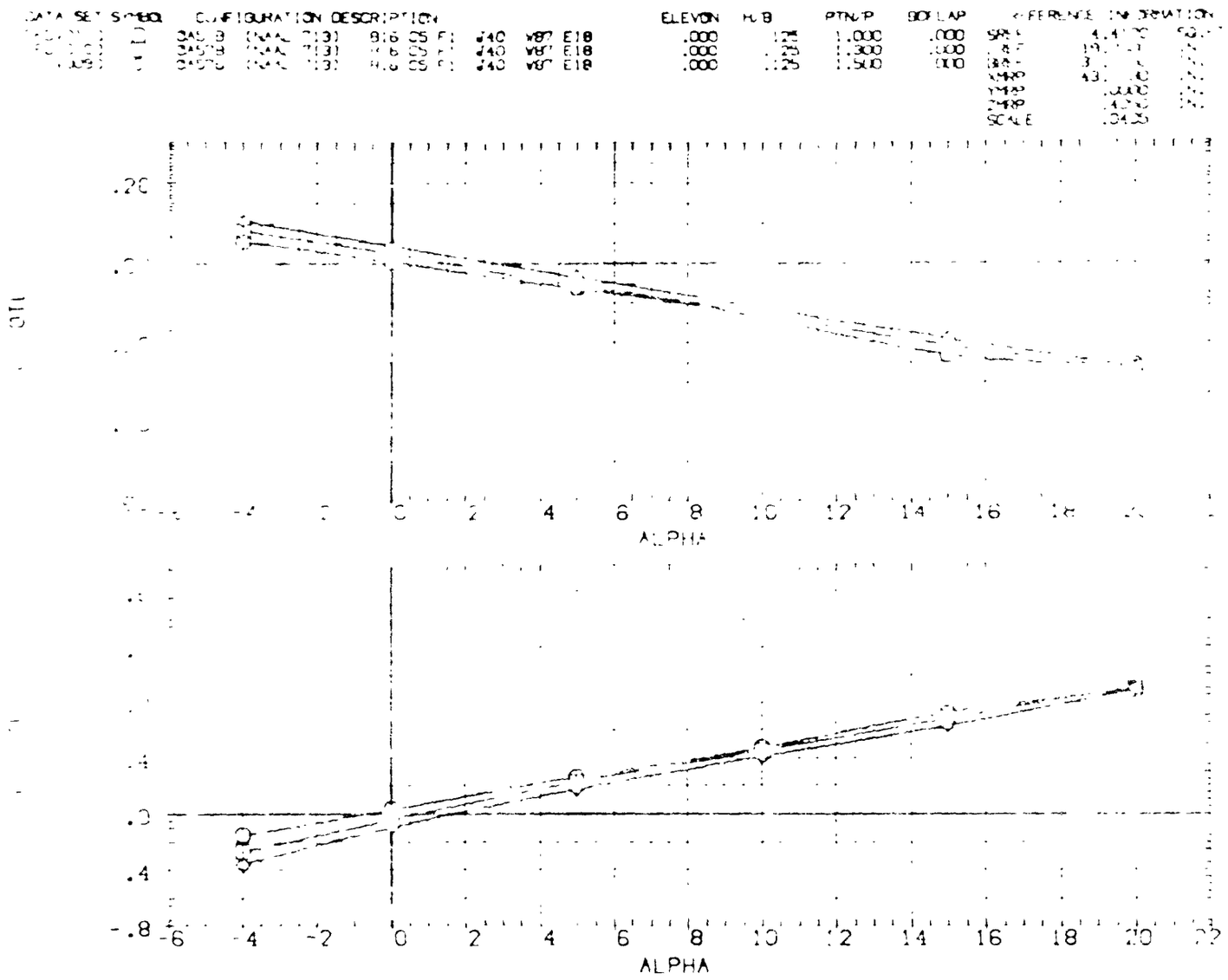

FIG. 2[illegible] INTEGRAL FORCE COEFFICIENTS WITH J40 . 0 ELEVON A[illegible] 0 BODY LAP

(A)MACH = .20 3E 112

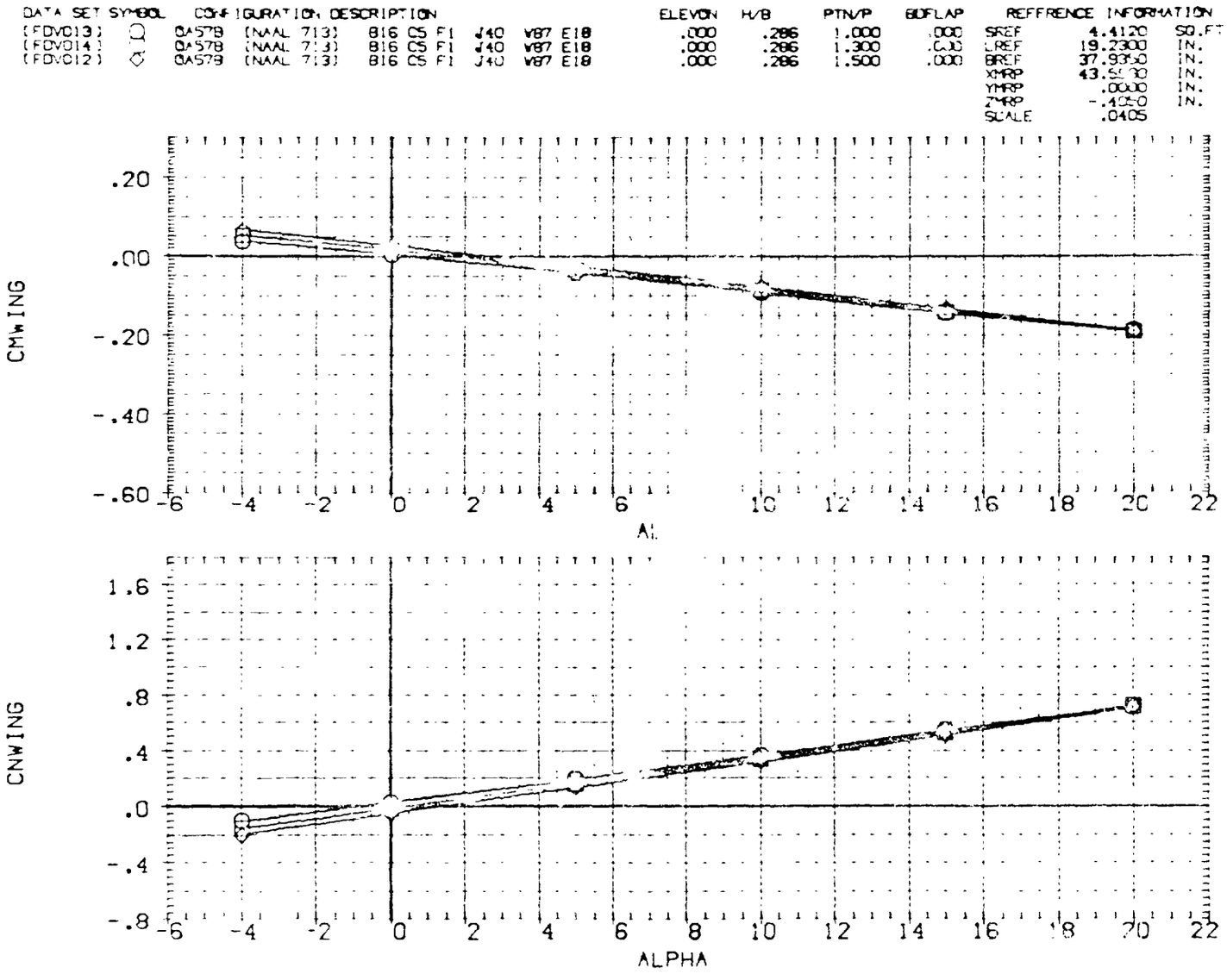

FIG. 27 INTEGRATED FORCE COEFFICIENTS WITH J40 . ELEVON AN FLAP

(A)MACH = 2

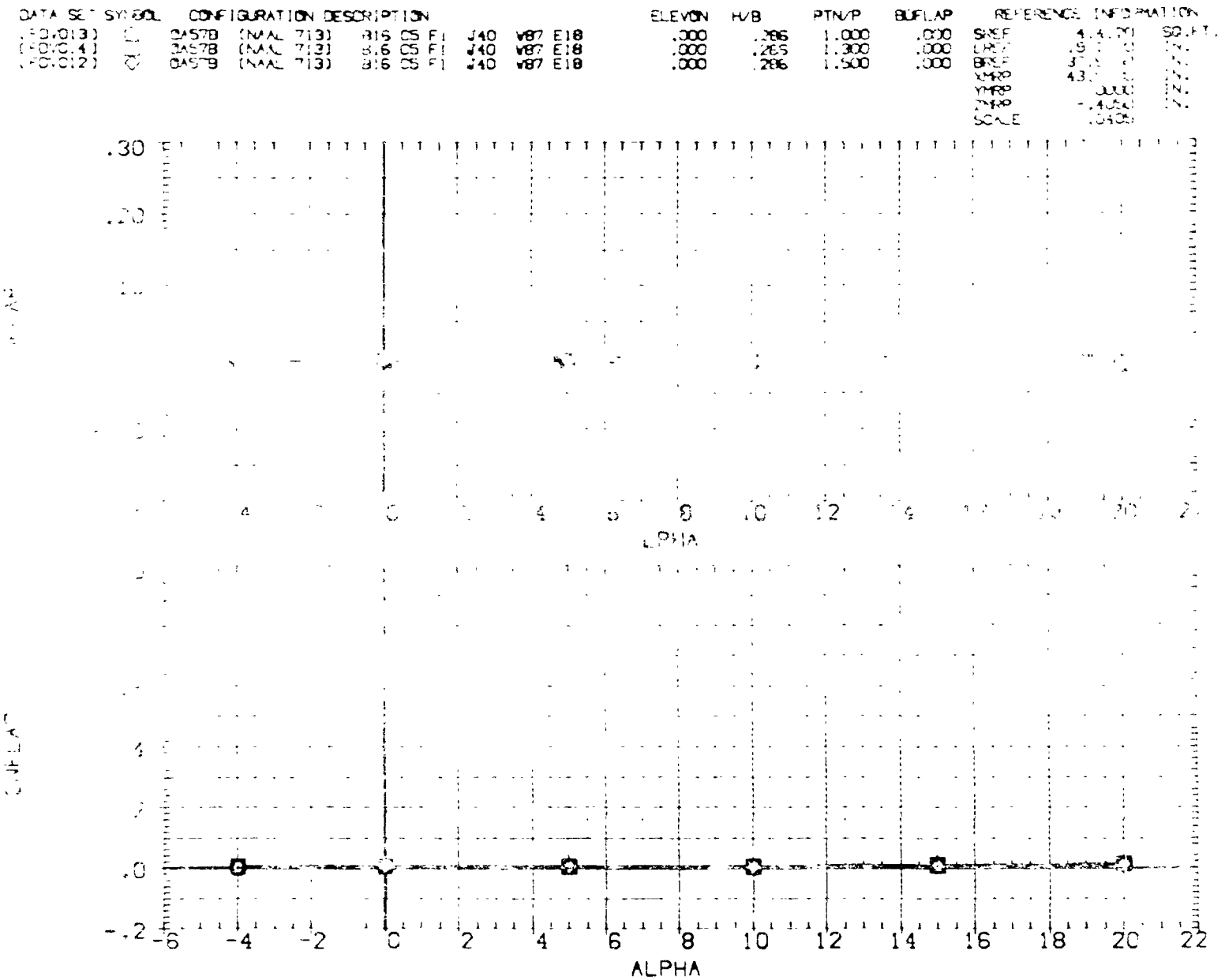

FIG. 27 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BOFLAP
(FDV013)	○	GA57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.000	.000
(FDV014)	□	GA57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.300	.000
(FDV012)	◇	GA57B (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.500	.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5530	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

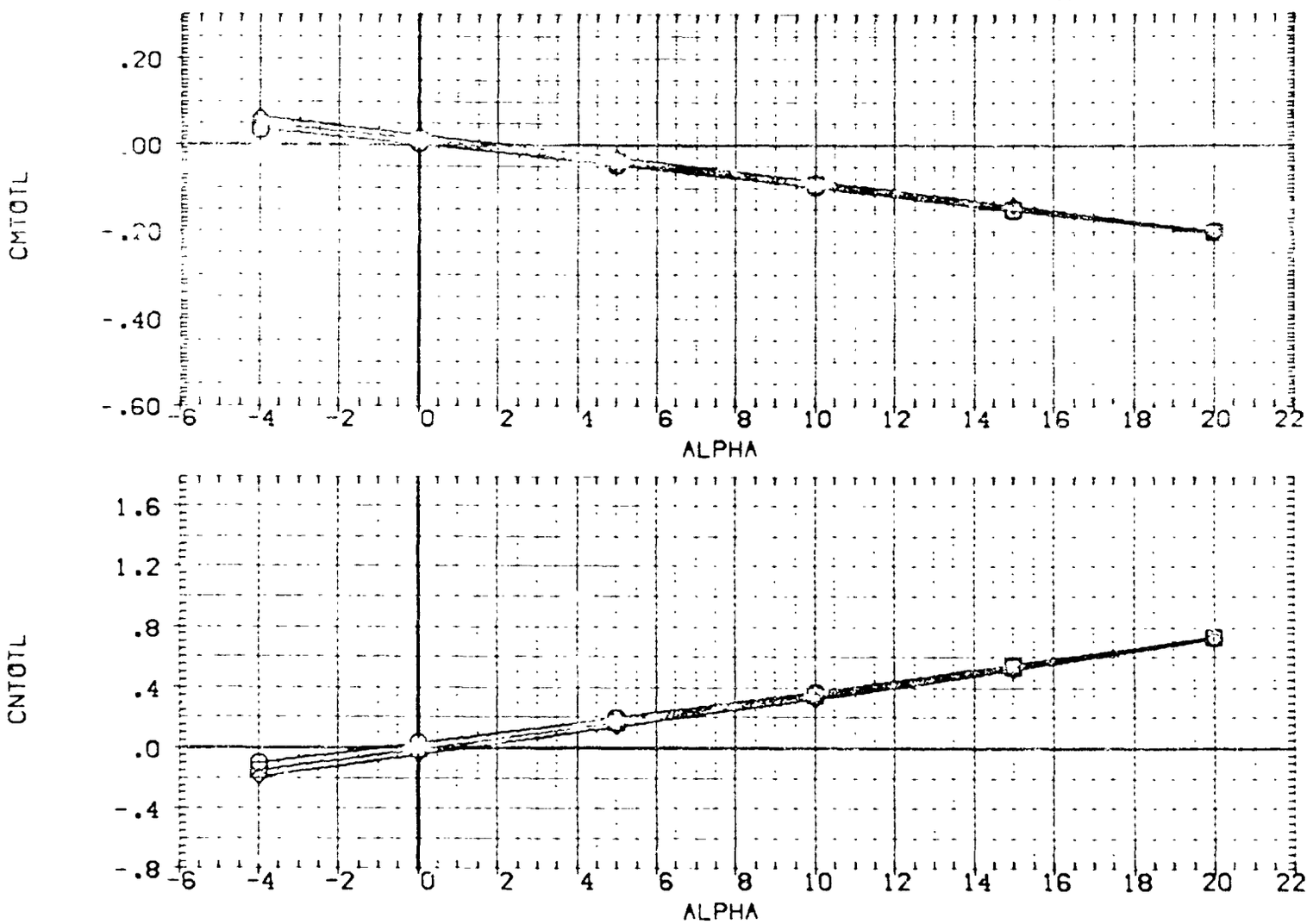

FIG. 27 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 0 BOFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV024)	○	0A578	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.125	1.000	20.000
(FDV023)	□	0A578	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.125	1.300	20.000
(FDV022)	◇	0A578	(NAAL 713)	B16 C5 F1	J40	V87 E18		.000	.125	1.500	20.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

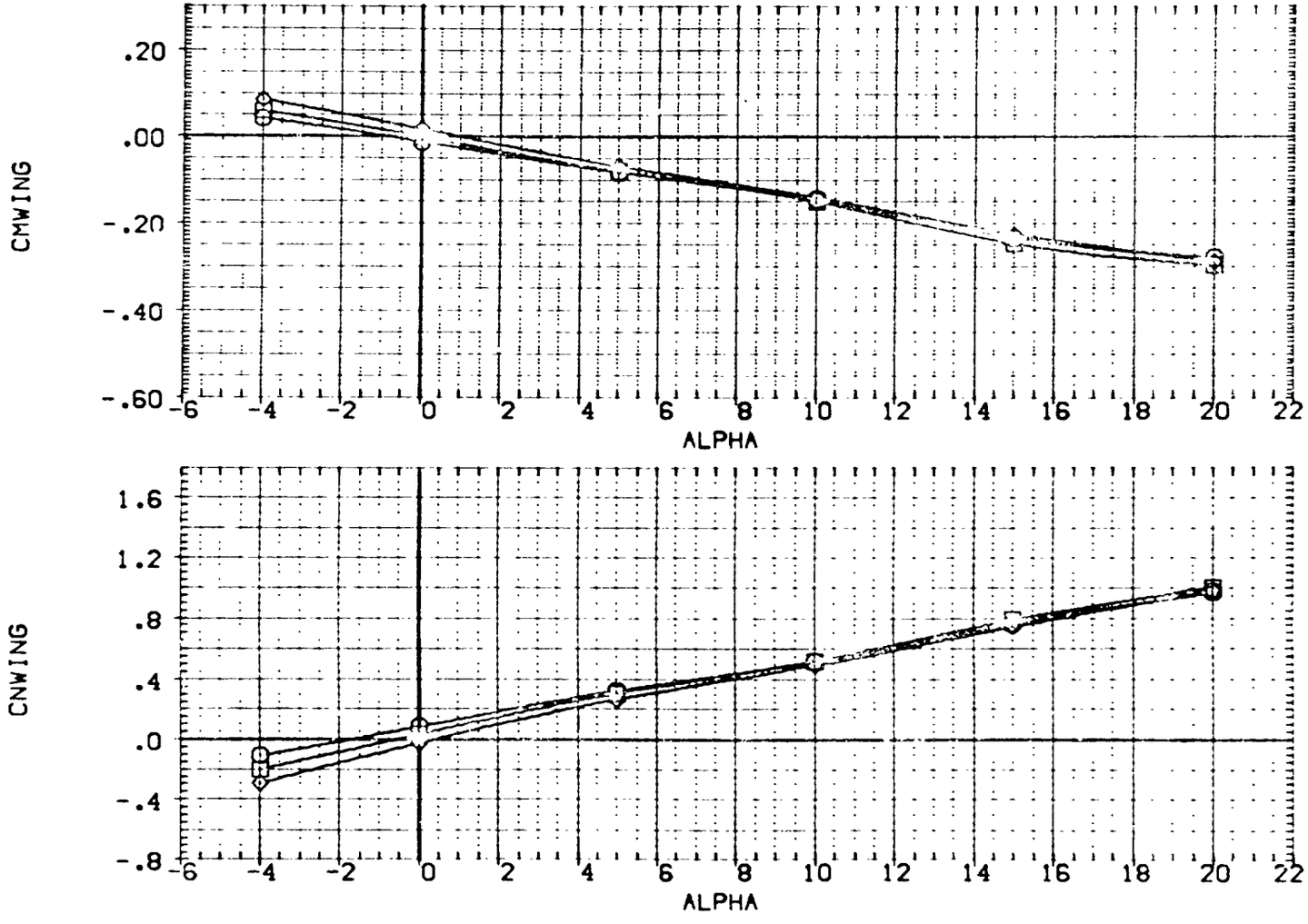

FIG. 28 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

(A)MACH = .20

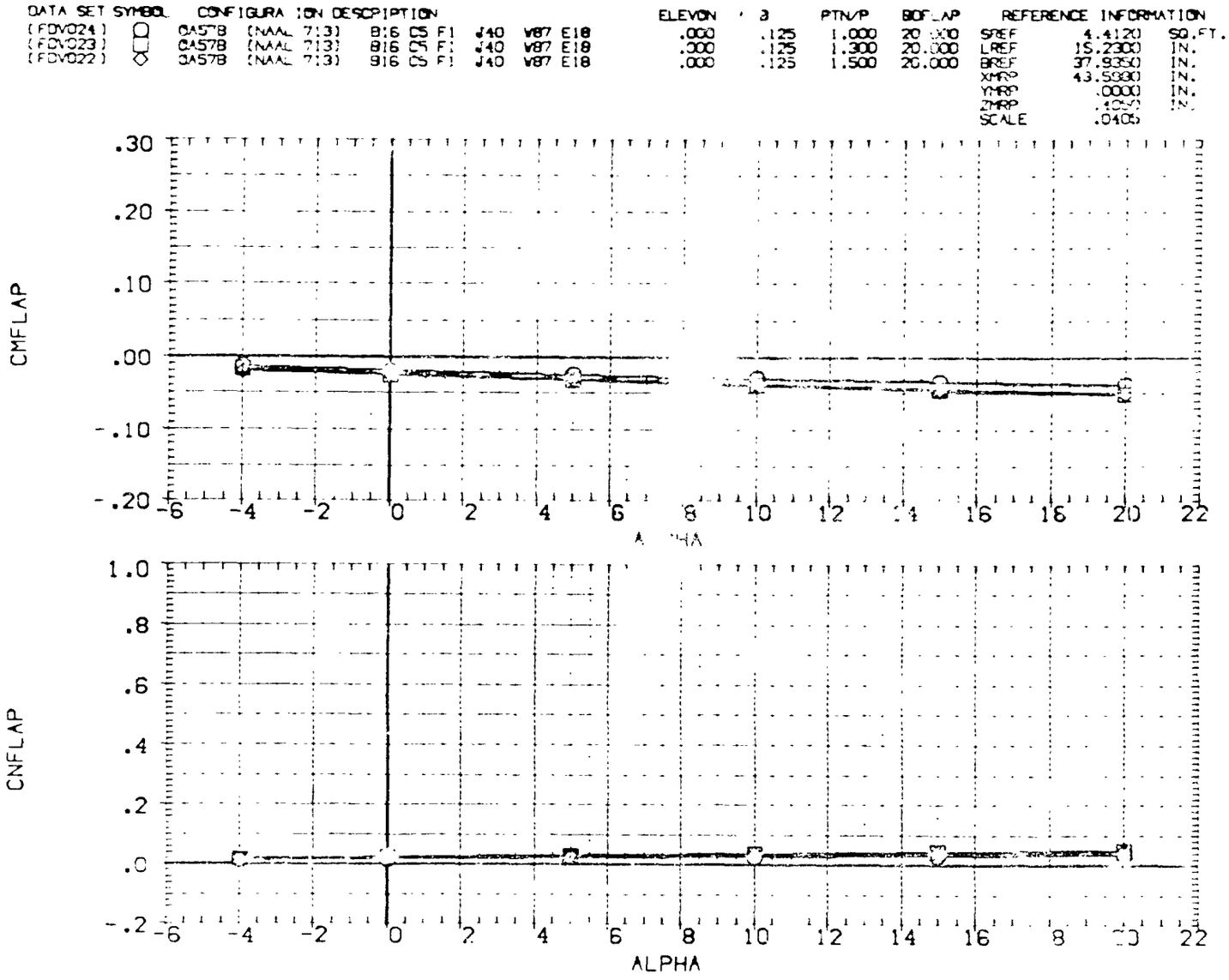

FIG. 28 INTEGRATED FORCE COEFFICIEN S WITH J40 , 0 ELEVON AND 20 BDFLAP

(A)MACH = .20

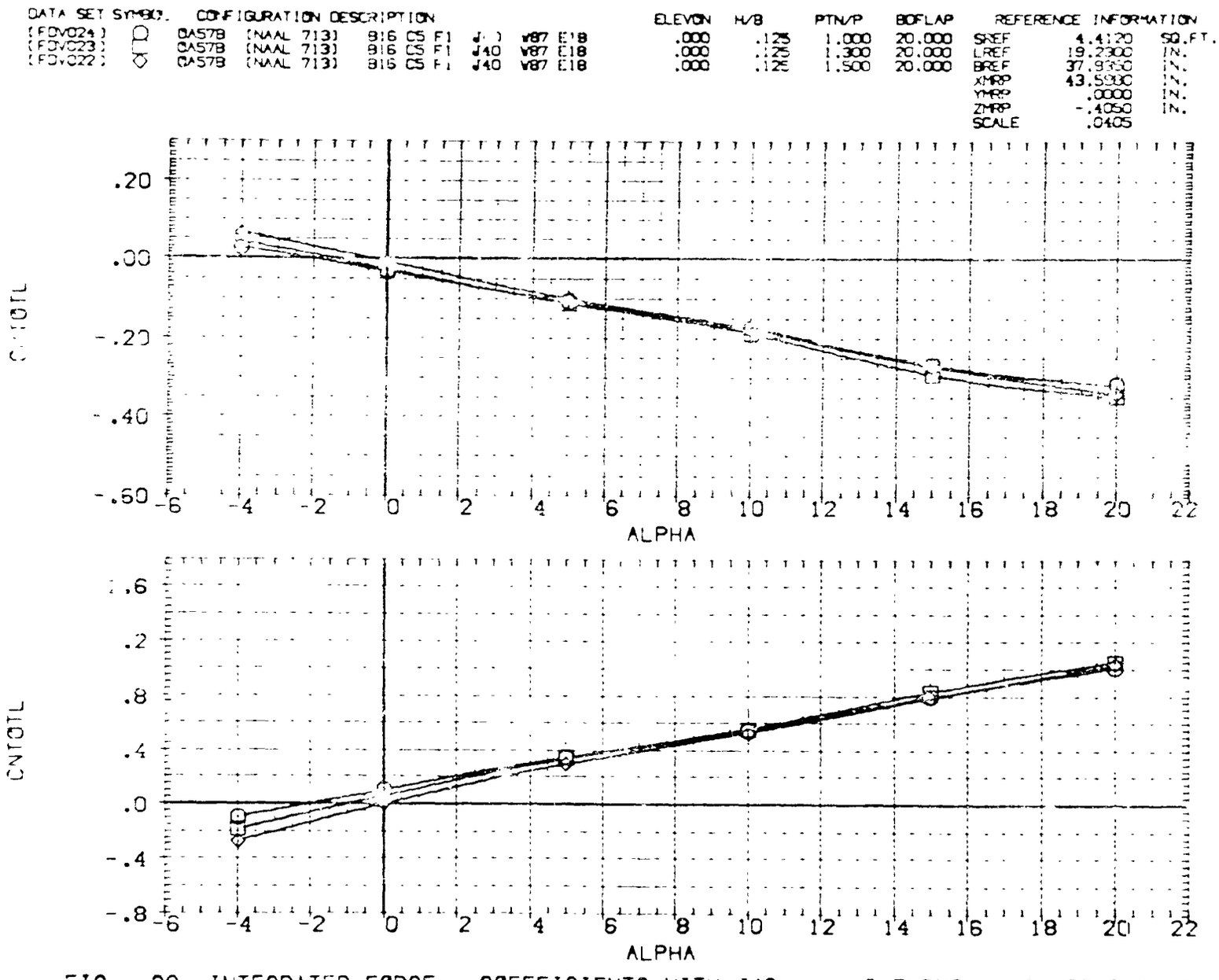

FIG. 28 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BOFLAP

(A)MACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BOFLAP
(FDV021) □	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.000	20.000
(FDV020) ○	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.300	20.000
(FDV019) ◇	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.286	1.500	20.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5330	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

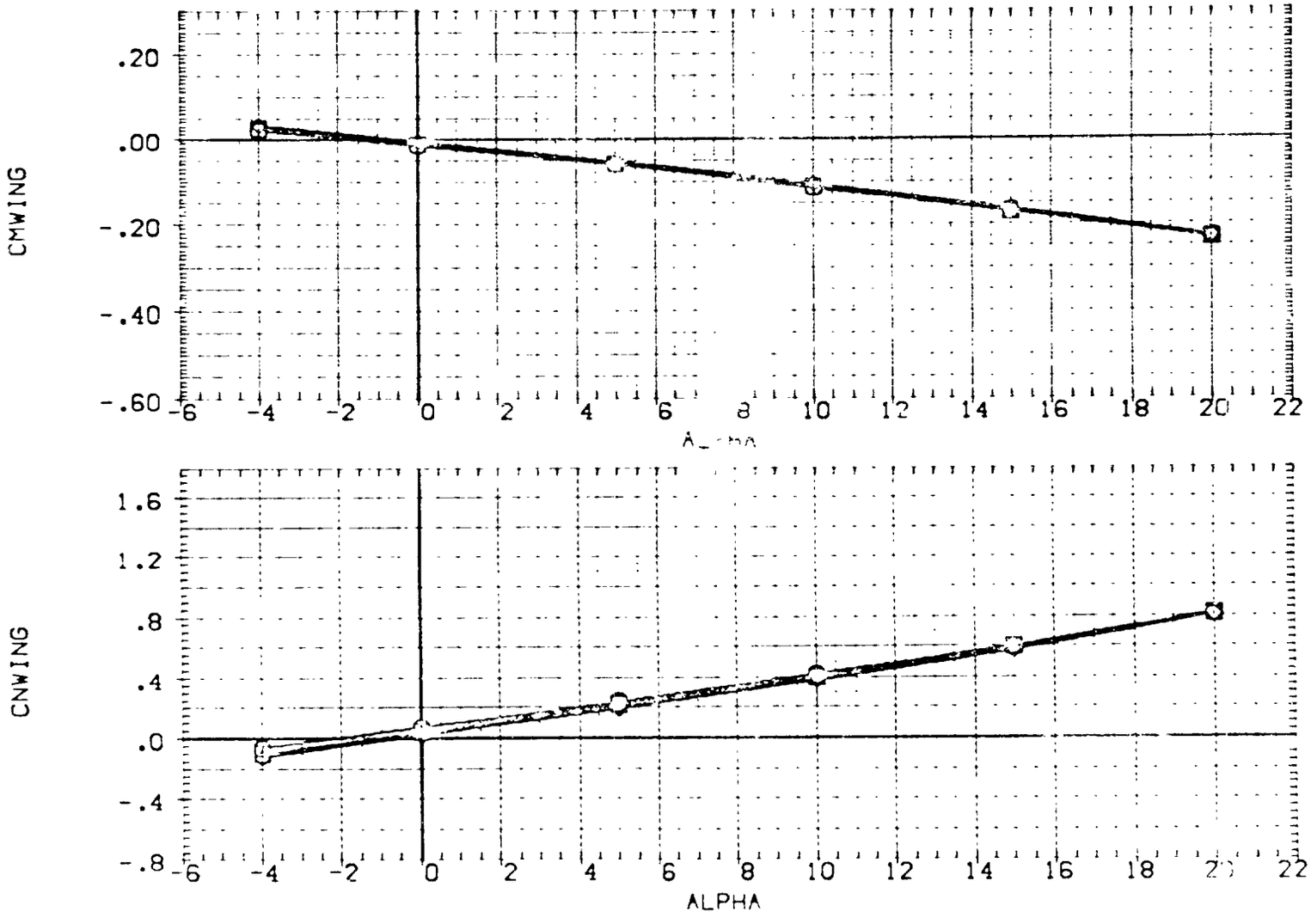

FIG. 28 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BOFLAP

MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION				ELEVON	H/B	PTN/P	BDFLAP
FOV021	○	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18	.000	.286	1.000	20.000
FOV020	□	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18	.000	.286	1.300	20.000
FOV019	△	0A578 (NAAL 713)	B16 C5 F1	J40	V87 E18	.000	.286	1.500	20.000

REFERENCE INFORMATION

SREF	4.4120	SQ. FT.
LREF	19.2360	IN.
BREF	37.9720	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

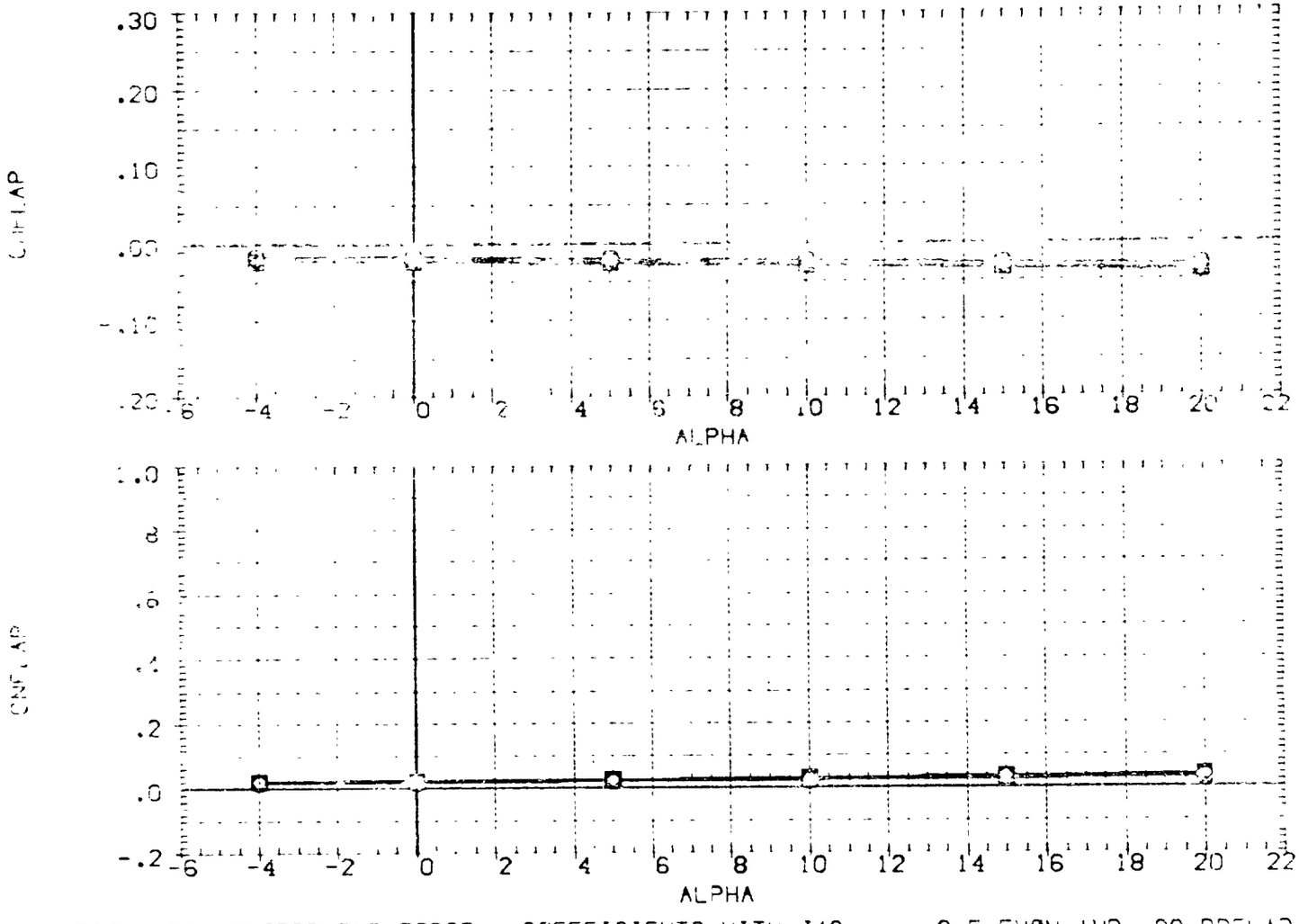

FIG. 28 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BDFLAP

(A)MACH = .20

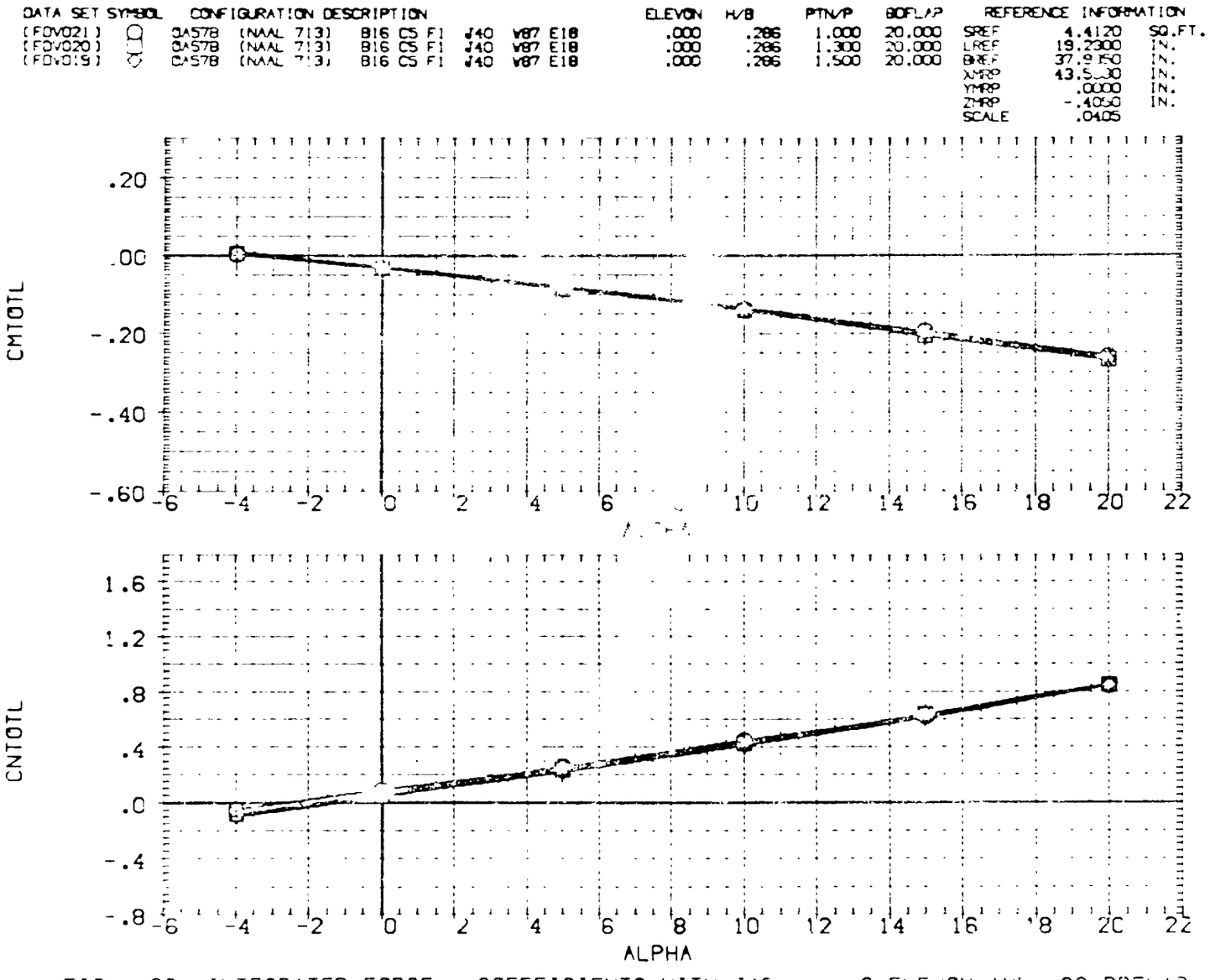

FIG. 28 INTEGRATED FORCE COEFFICIENTS WITH J40 , 0 ELEVON AND 20 BOFLAP

(A)MACH = .6

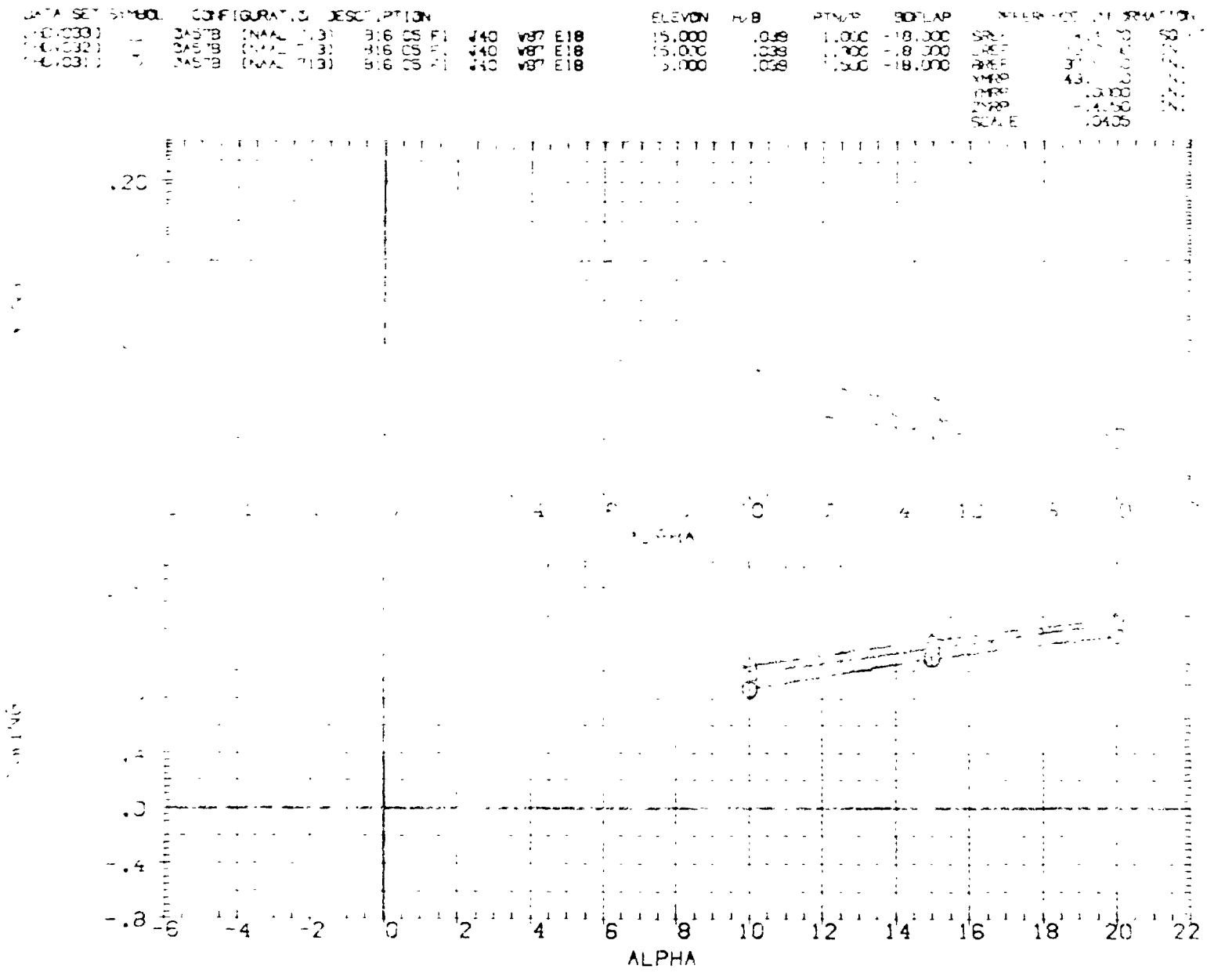

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MAC = .20

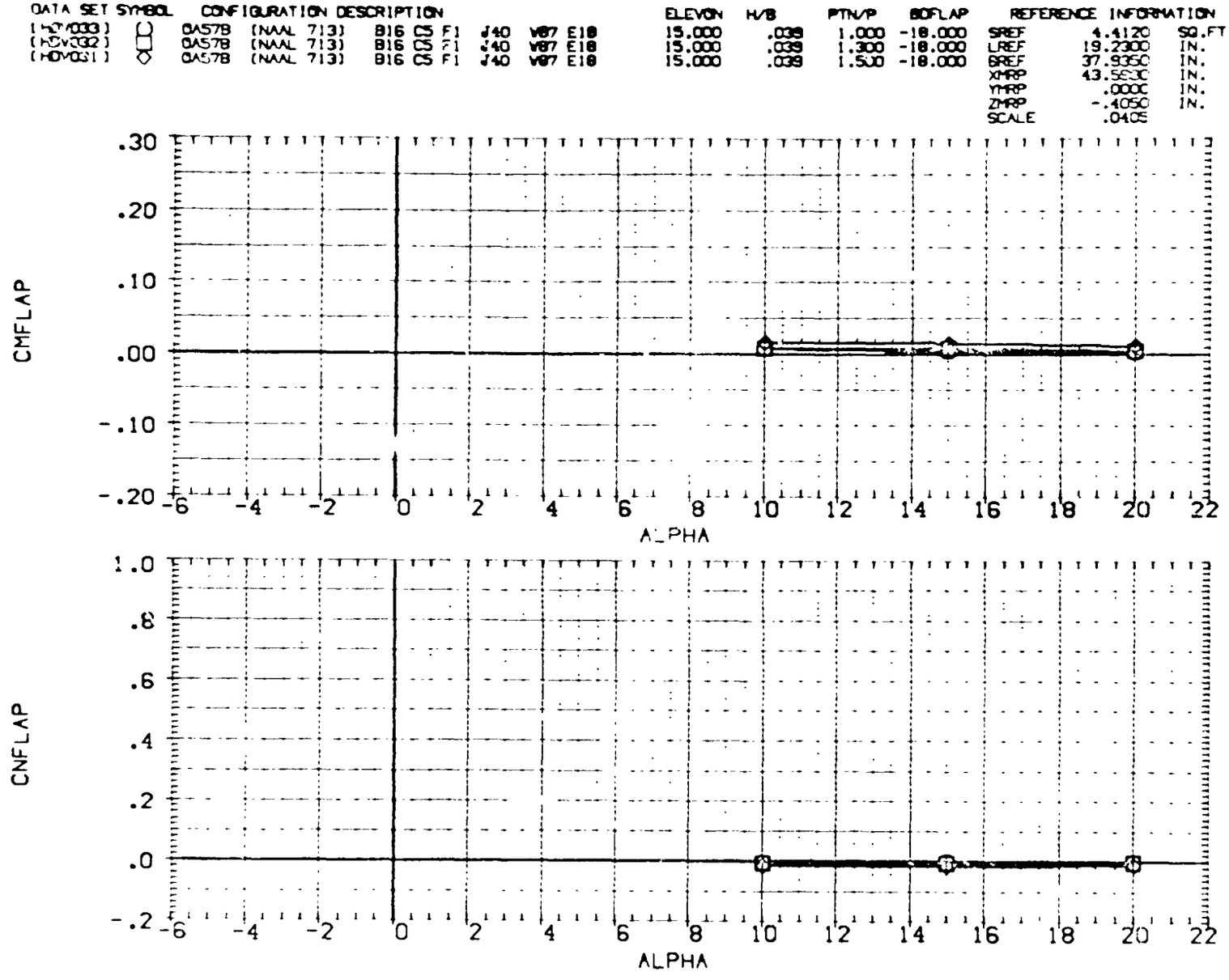

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40, 15 ELEVON AND -18 BDFLAP

(A) MACH = .60

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION				ELEVON	H/B	PTN/P	BDFLAP
(CV033)	□	BASIC (NAL 713)	B16	C5	F1 J40 W87 E18	15.000	.039	1.000	-18.000
(CV032)	○	BASIC (NAL 713)	B16	C5	F1 J40 W87 E18	15.000	.039	.500	-18.000
(CV031)	△	BASIC (NAL 713)	B16	C5	F1 J40 W87 E18	15.000	.039	.500	-18.000

REFERENCE INFORMATION

SREF	1.4
XMRP	43.
YMRP	.0000
ZMRP	-.4500
SCALE	.0450

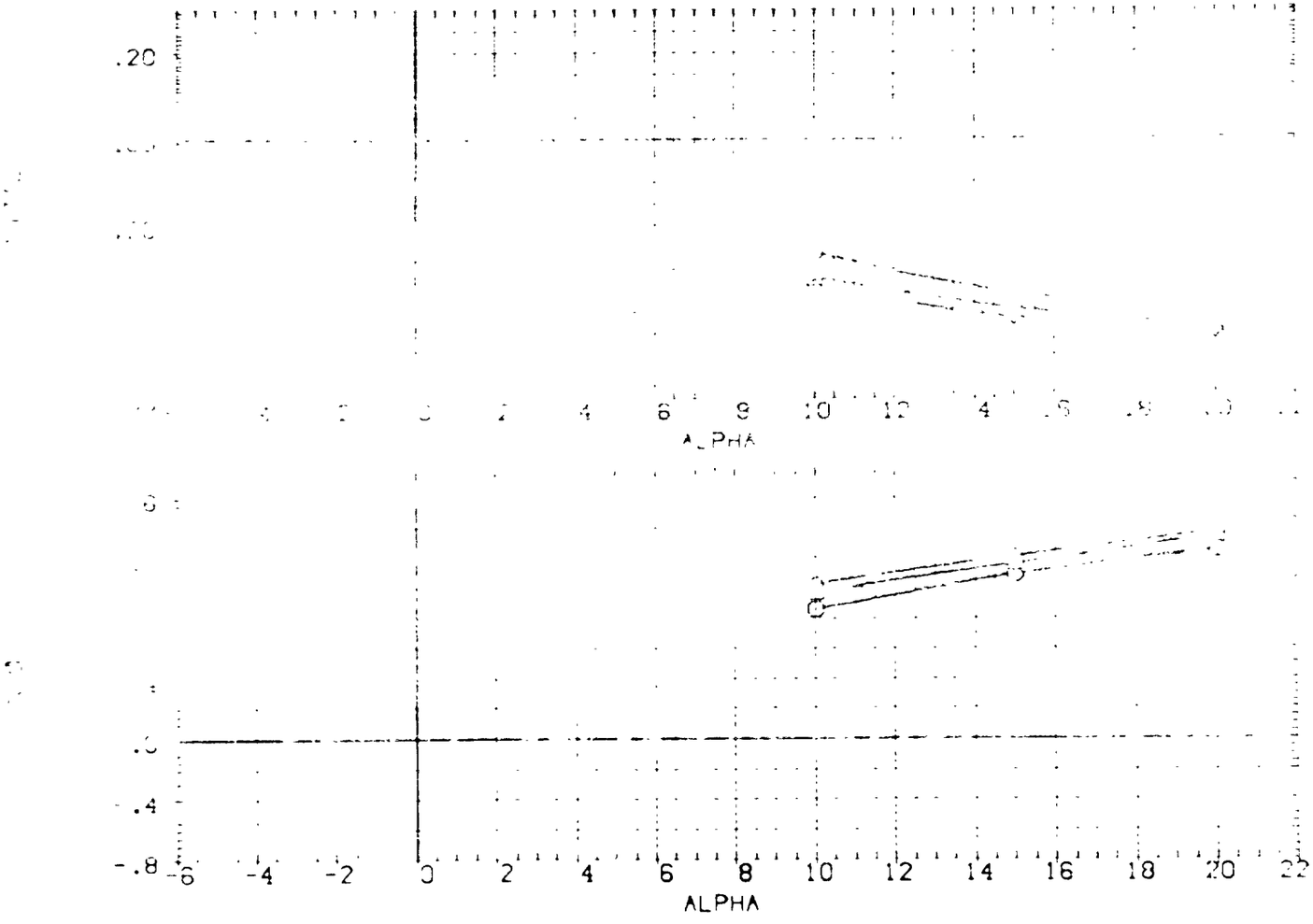

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 15 ELEVON AND -18 BDFLAP

(A)MACH = .6

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV030)	○	0A578	(NAAL 713)	B16 CS F1	J40	V87 E18		15.000	.125	1.000	-18.000
(FDV029)	□	0A578	(NAAL 713)	B16 CS F1	J40	V87 E18		15.000	.125	1.300	-18.000
(FDV028)	◇	0A578	(NAAL 713)	B16 CS F1	J40	V87 E18		15.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.5350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

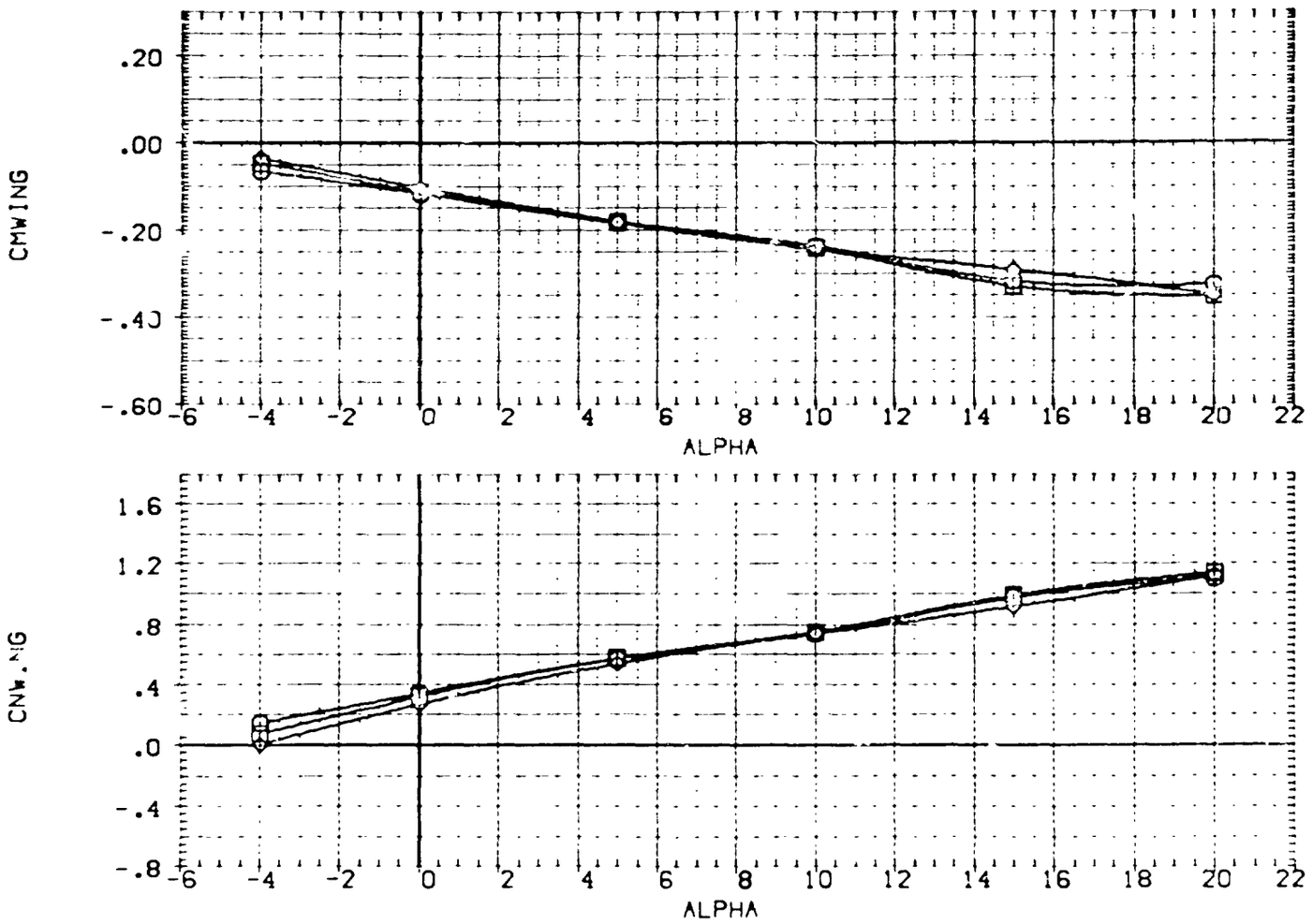

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

(ADMACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION				ELEVON	H/B	PTN/P	BOFLAP
[illegible]	[illegible]	B16	[illegible]	J40 V87 E18	15.000	.125	1.000	-18.000
[illegible]	[illegible]	B16	[illegible]	J40 V87 E18	15.000	.125	1.300	-18.000
[illegible]	[illegible]	B16	[illegible]	J40 V87 E18	15.000	.125	1.500	-18.000

REFERENCE INFORMATION

SREF	4.4	SQ. FT.
[illegible]	19	
[illegible]	5	
[illegible]	4	
[illegible]	[illegible]	
[illegible]	[illegible]	
SCALE	.04	

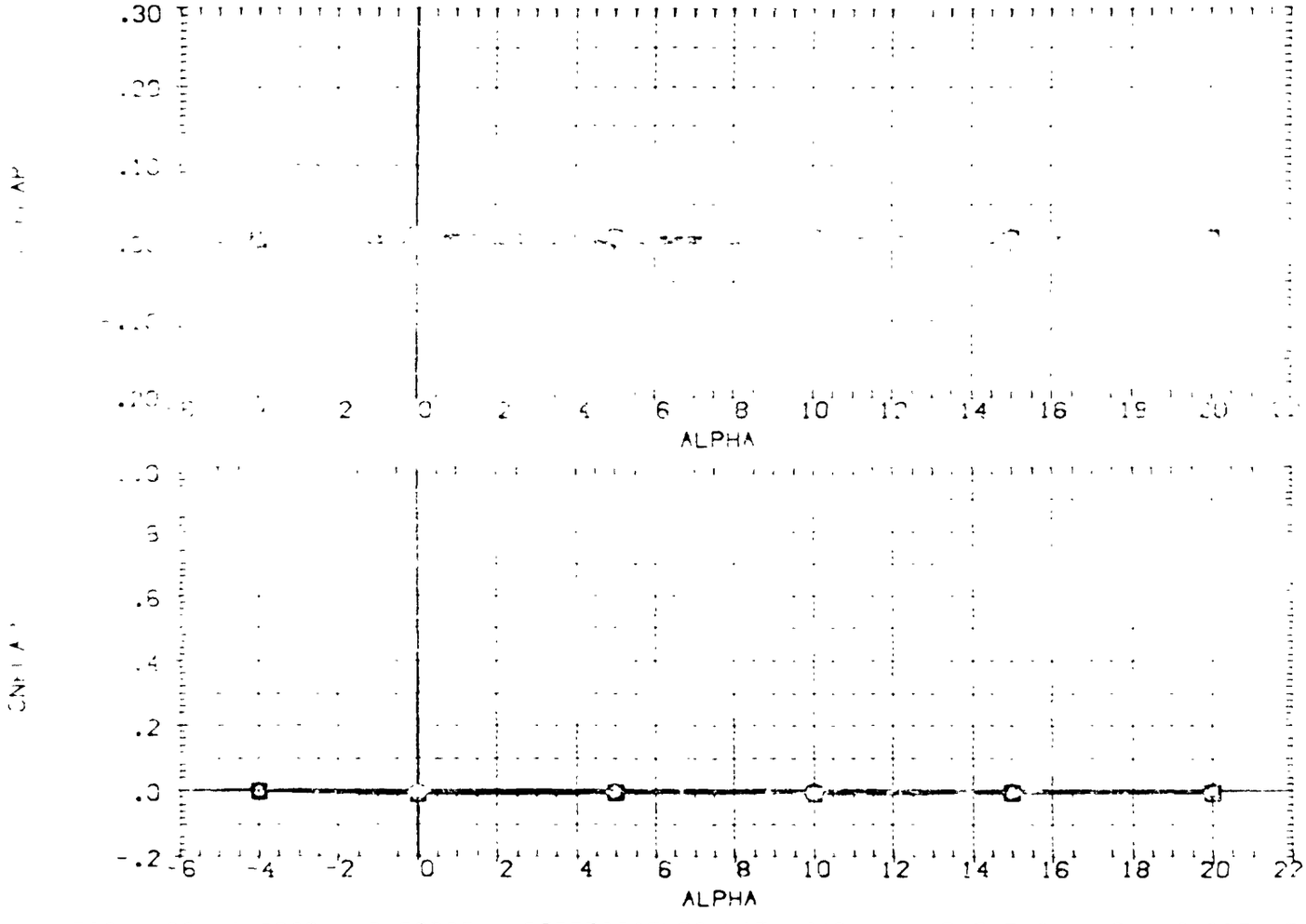

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40, 15 ELEVON AND -18 BOFLAP

MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV030)	□	0A578 (NAAL 713) B16 CS F1 J40 V87 E18	15.000	.125	1.000	-18.000
(FDV029)	□	0A578 (NAAL 713) B16 CS F1 J40 V87 E18	15.000	.125	1.300	-18.000
(FDV028)	◇	0A578 (NAAL 713) B16 CS F1 J40 V87 E18	15.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9360	IN.
XMRP	43.5930	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

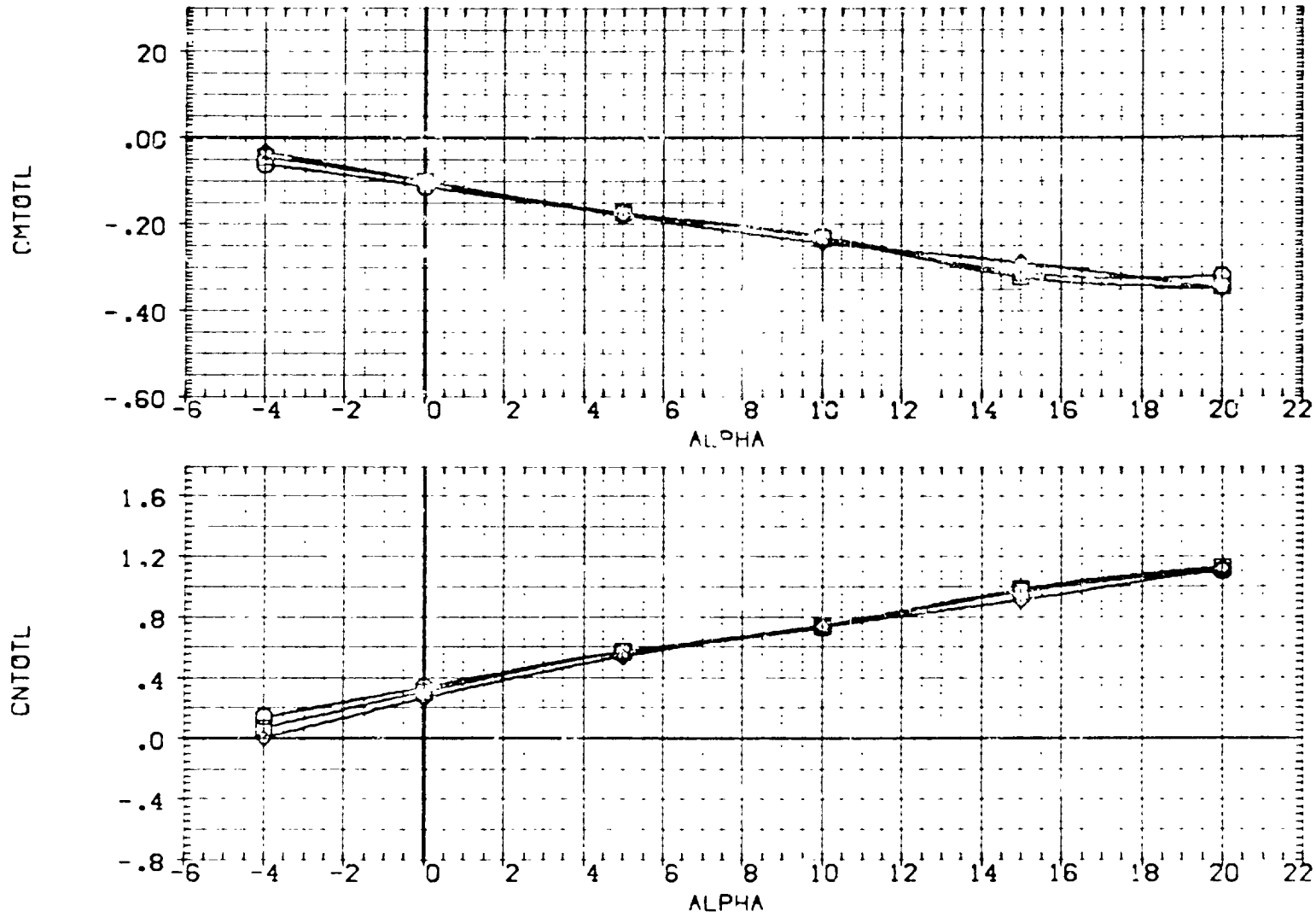

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

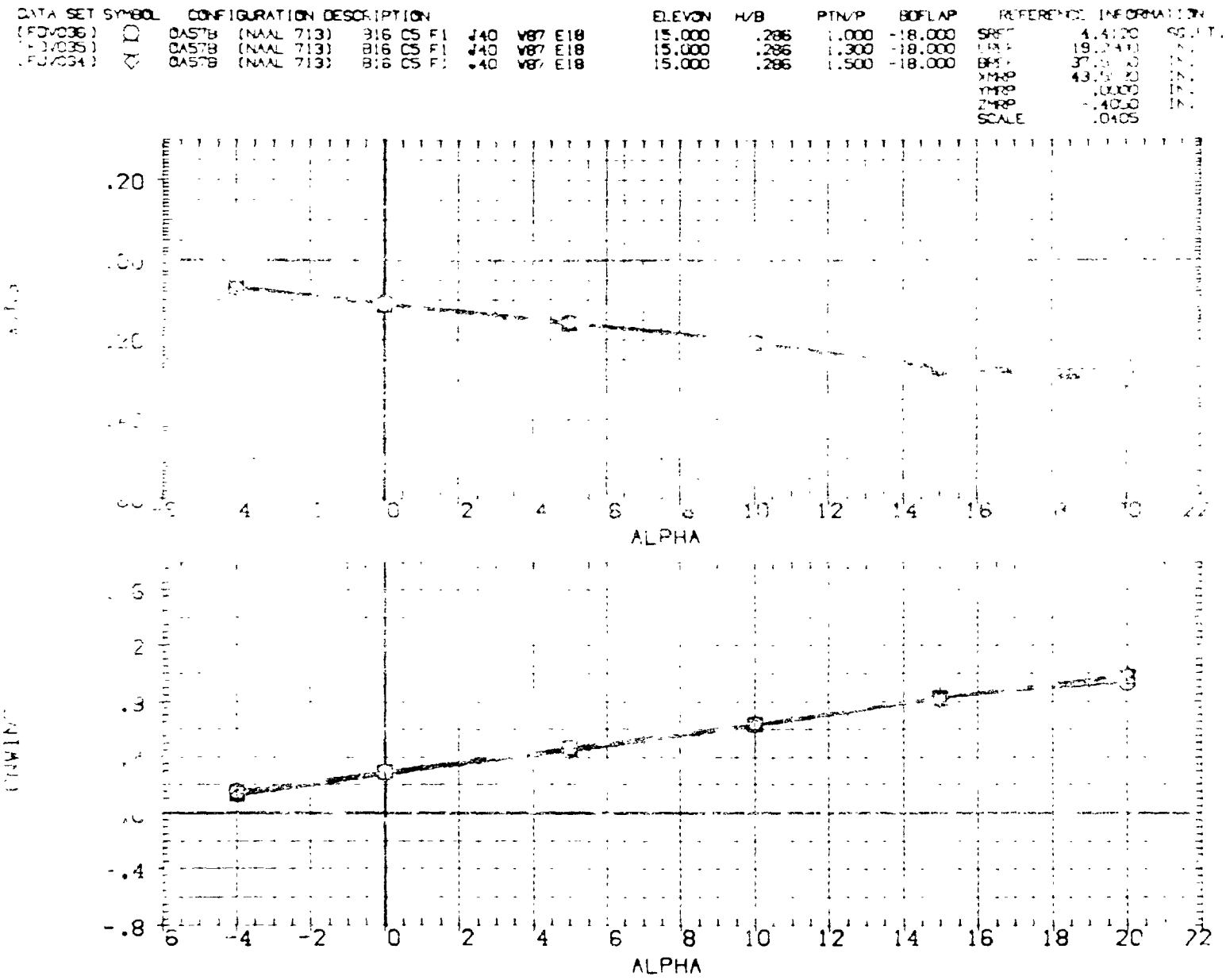

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDF_AP

(A)MACH = .20

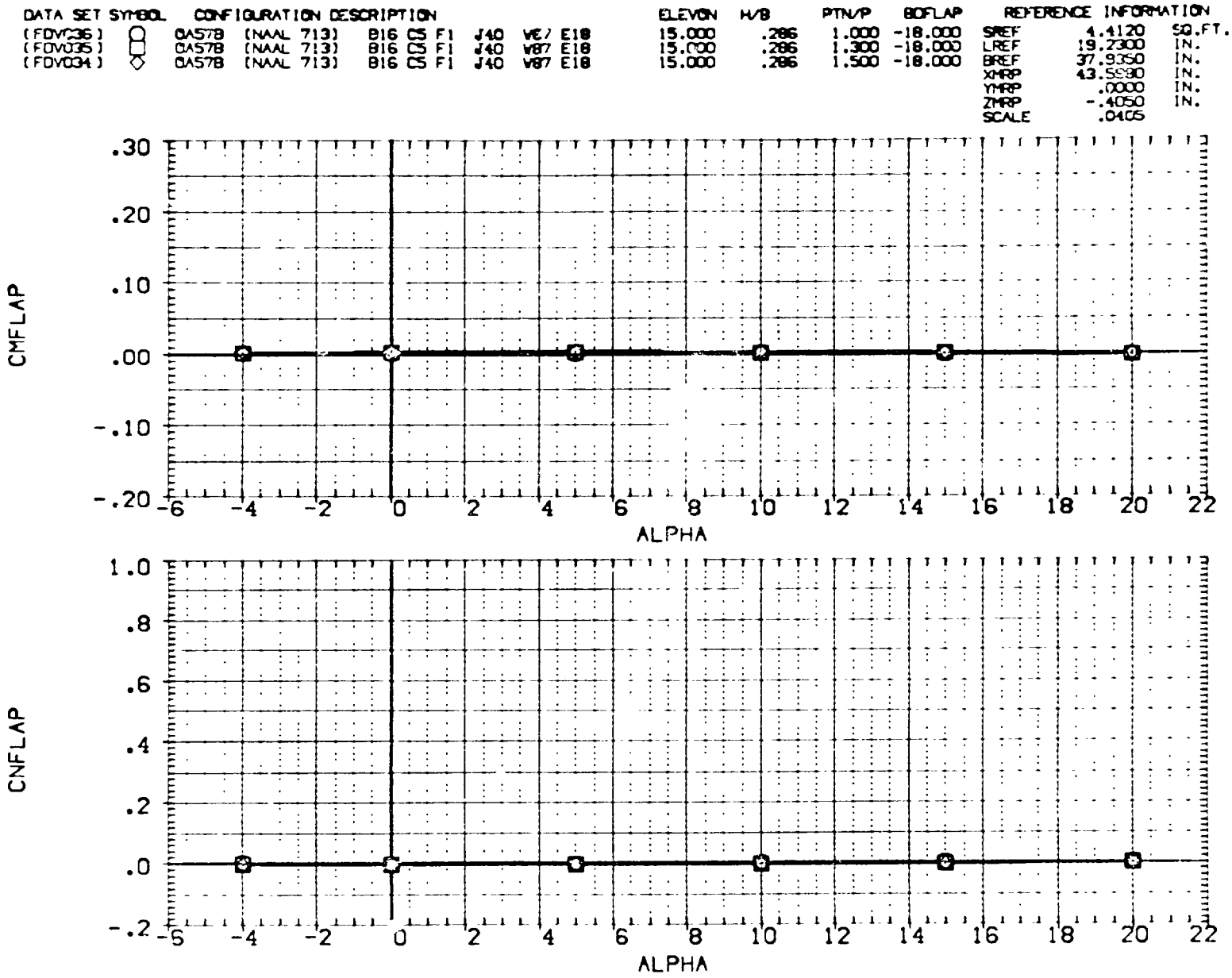

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

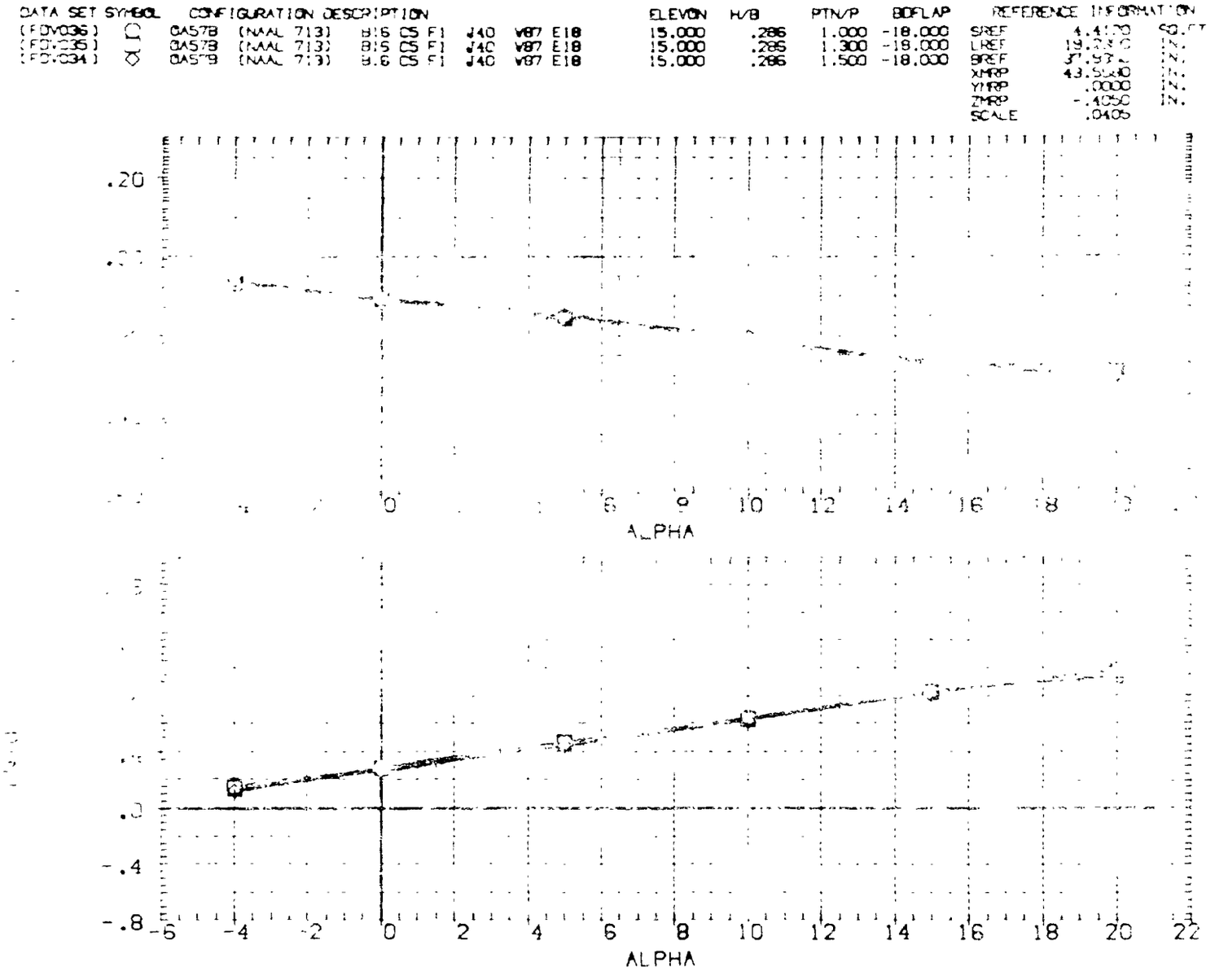

FIG. 29 INTEGRATED FORCE COEFFICIENTS WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MAC = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV056)	○	BAS7B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.039	1.000	-18.000
(FDV055)	□	BAS7B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.039	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5380	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

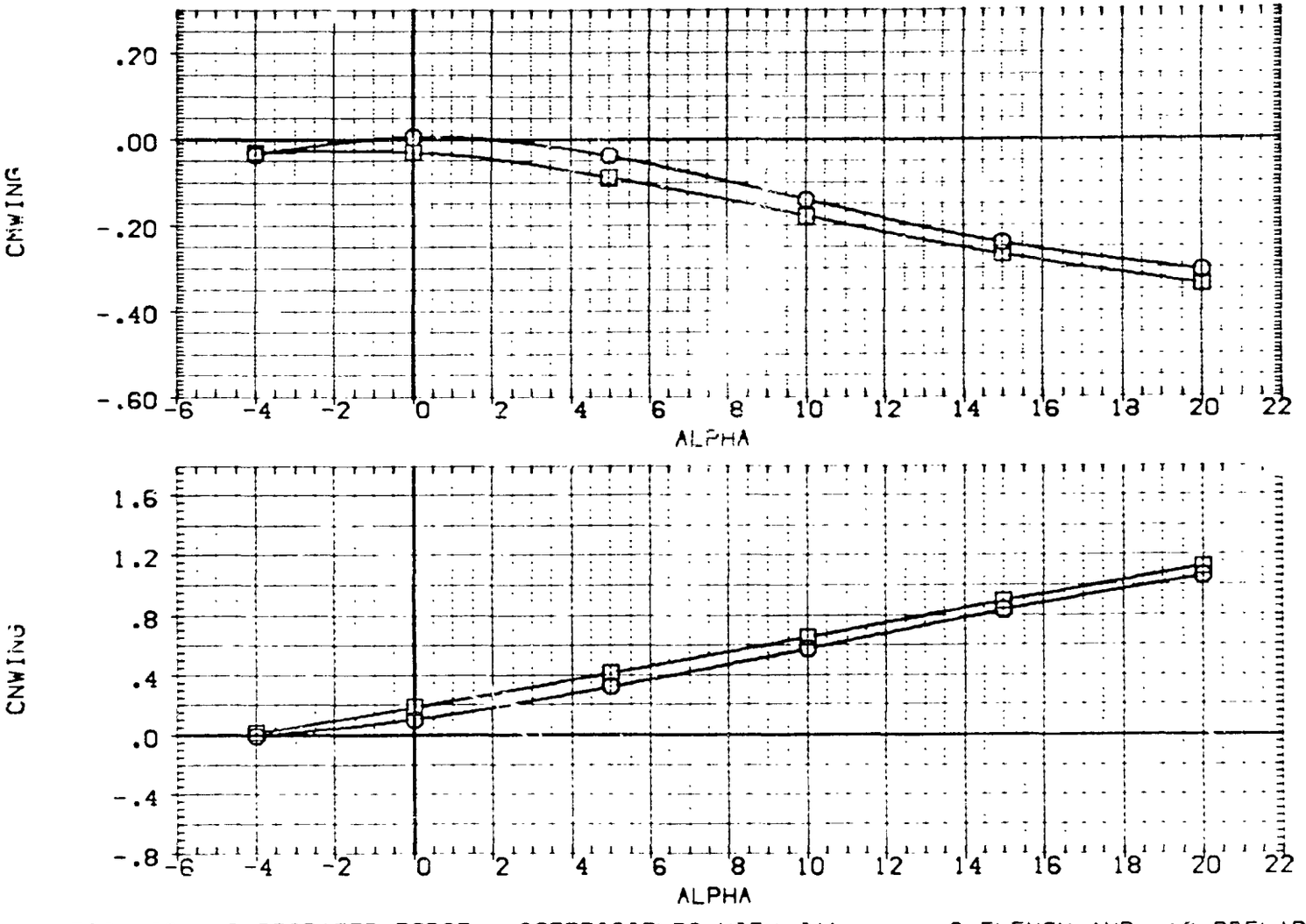

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

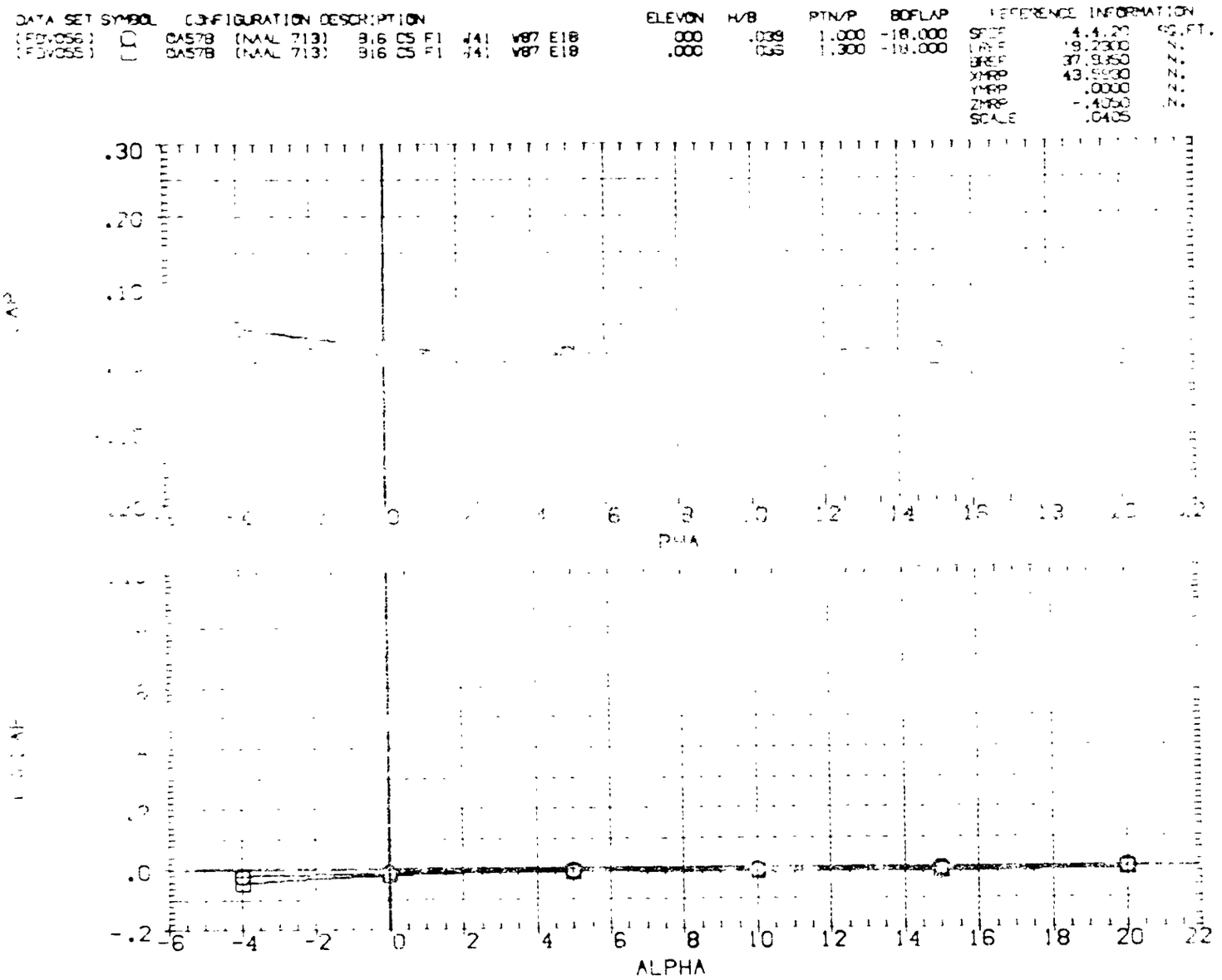

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BOFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/C	PTN/P	BDFLAP
(FDV056)		0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.039	1.000	-18.000
(FDV055)		0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.039	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

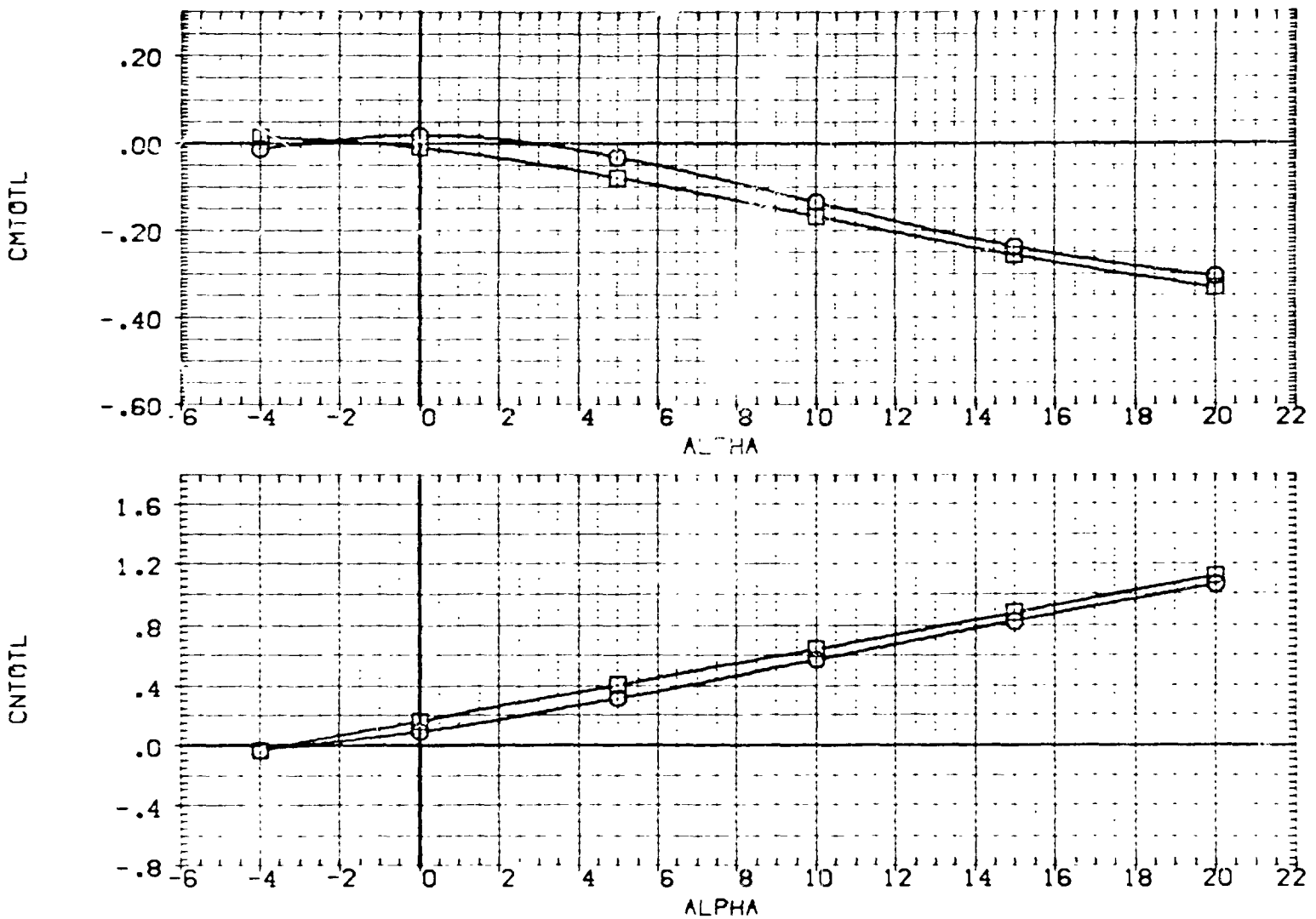

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

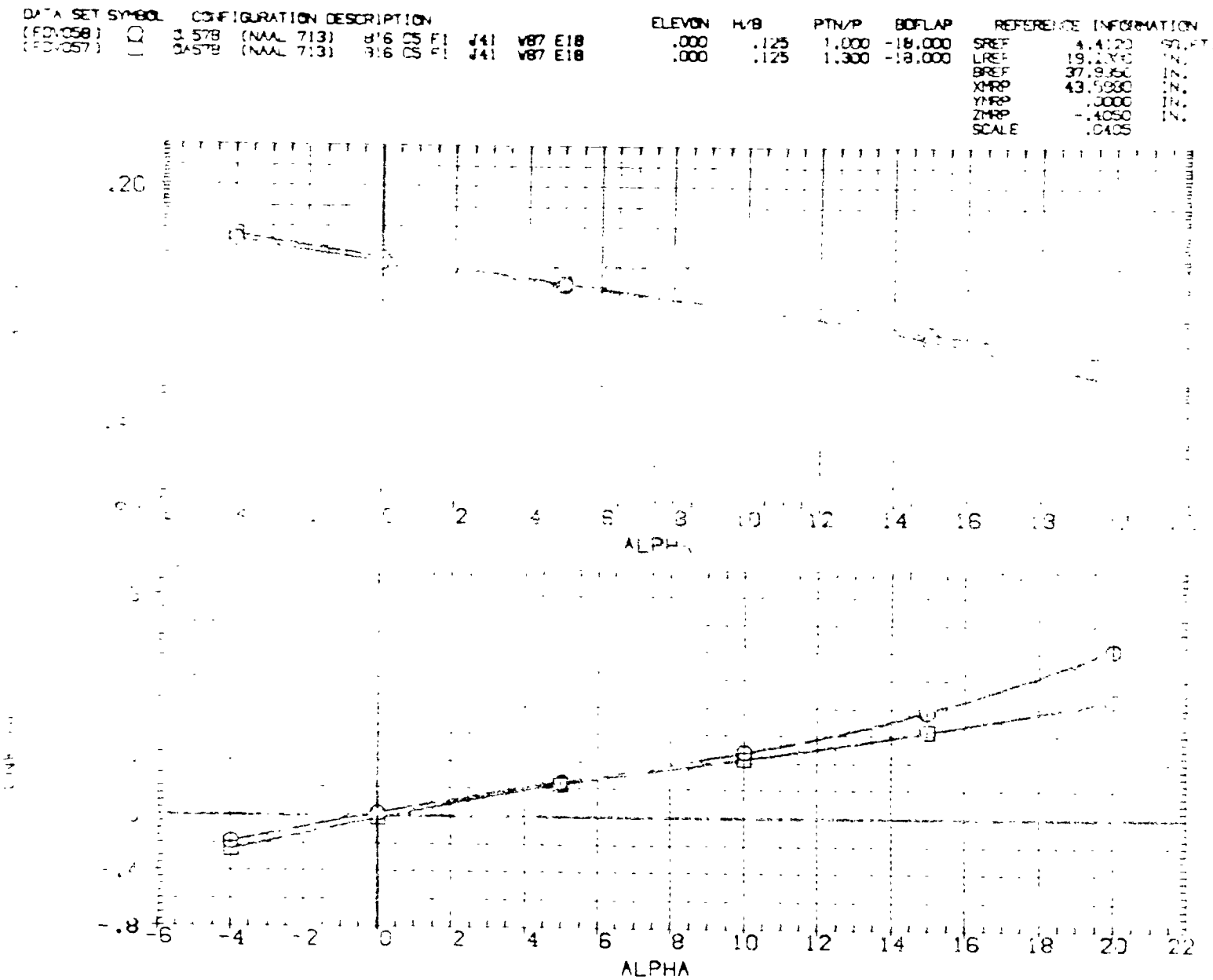

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .2

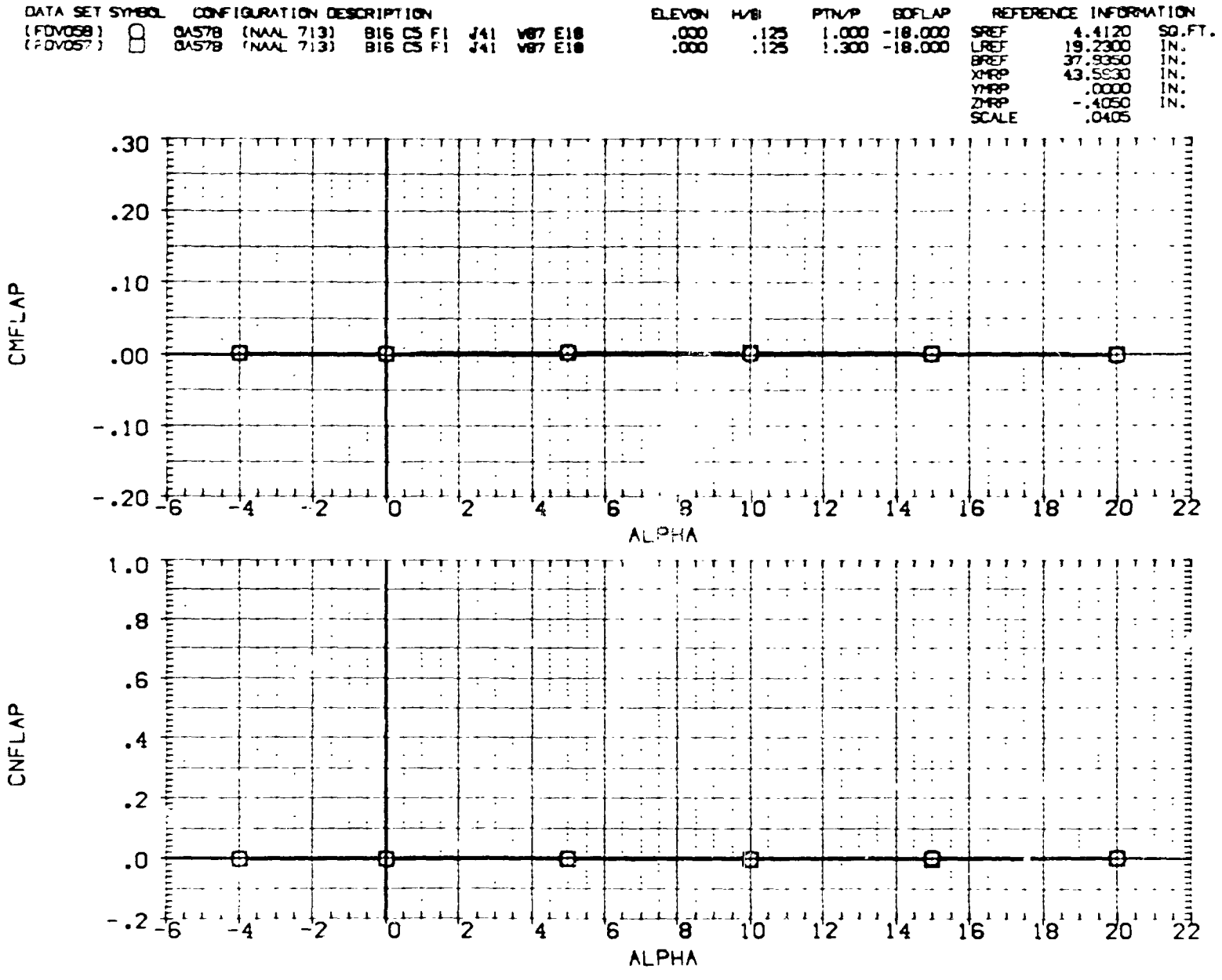

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV058)	□	0A57B	(NAAL 713)	B16 C5 F1	J41	W87	E18	.000	.125	1.000	-18.000
(FDV057)	○	0A57B	(NAAL 713)	B16 C5 F1	J41	W87	E18	.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5080	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

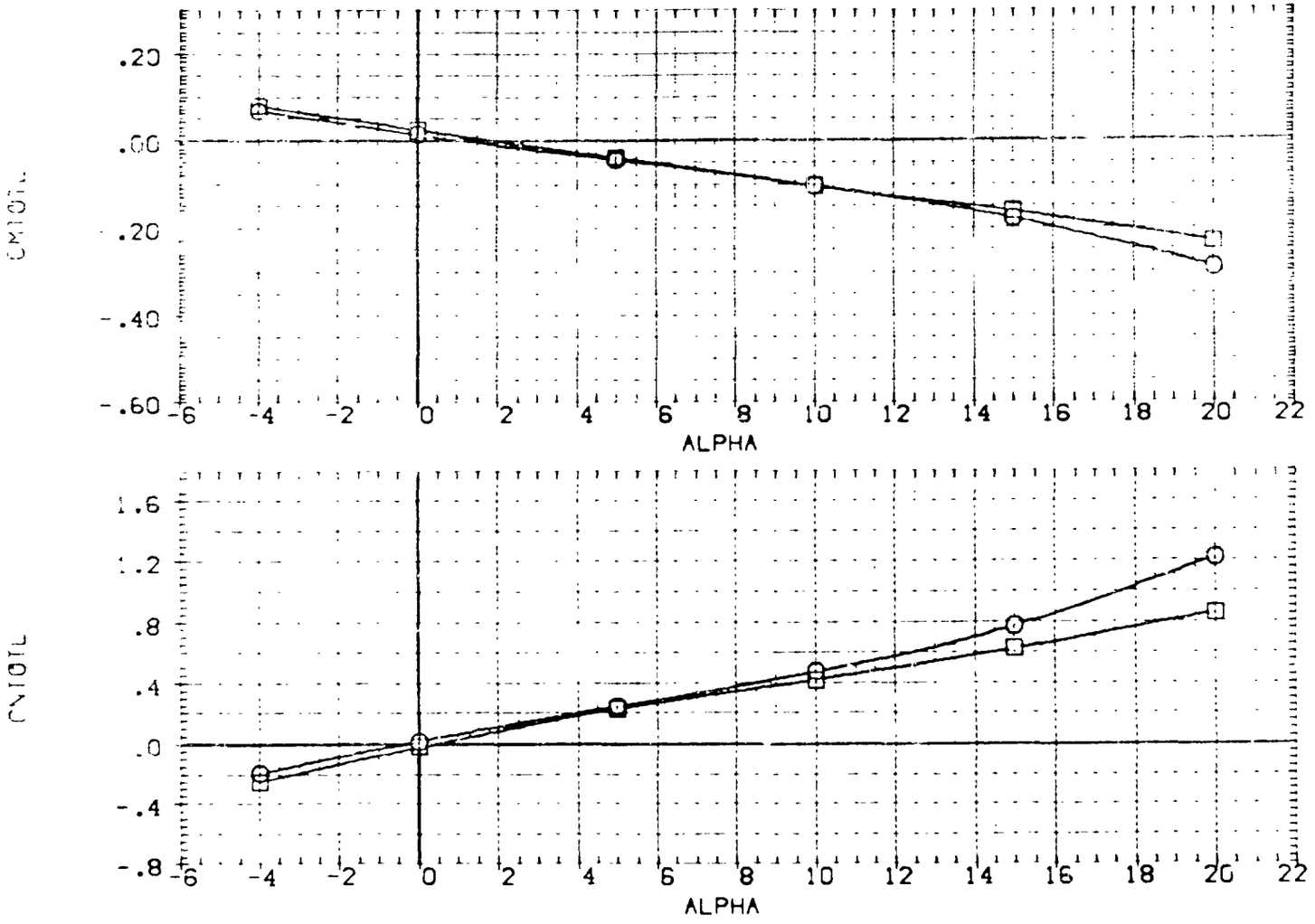

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MAC= = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV053)	○	BAC 78 (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.286	1.000	-18.000
(FDV052)	□	BAC 78 (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

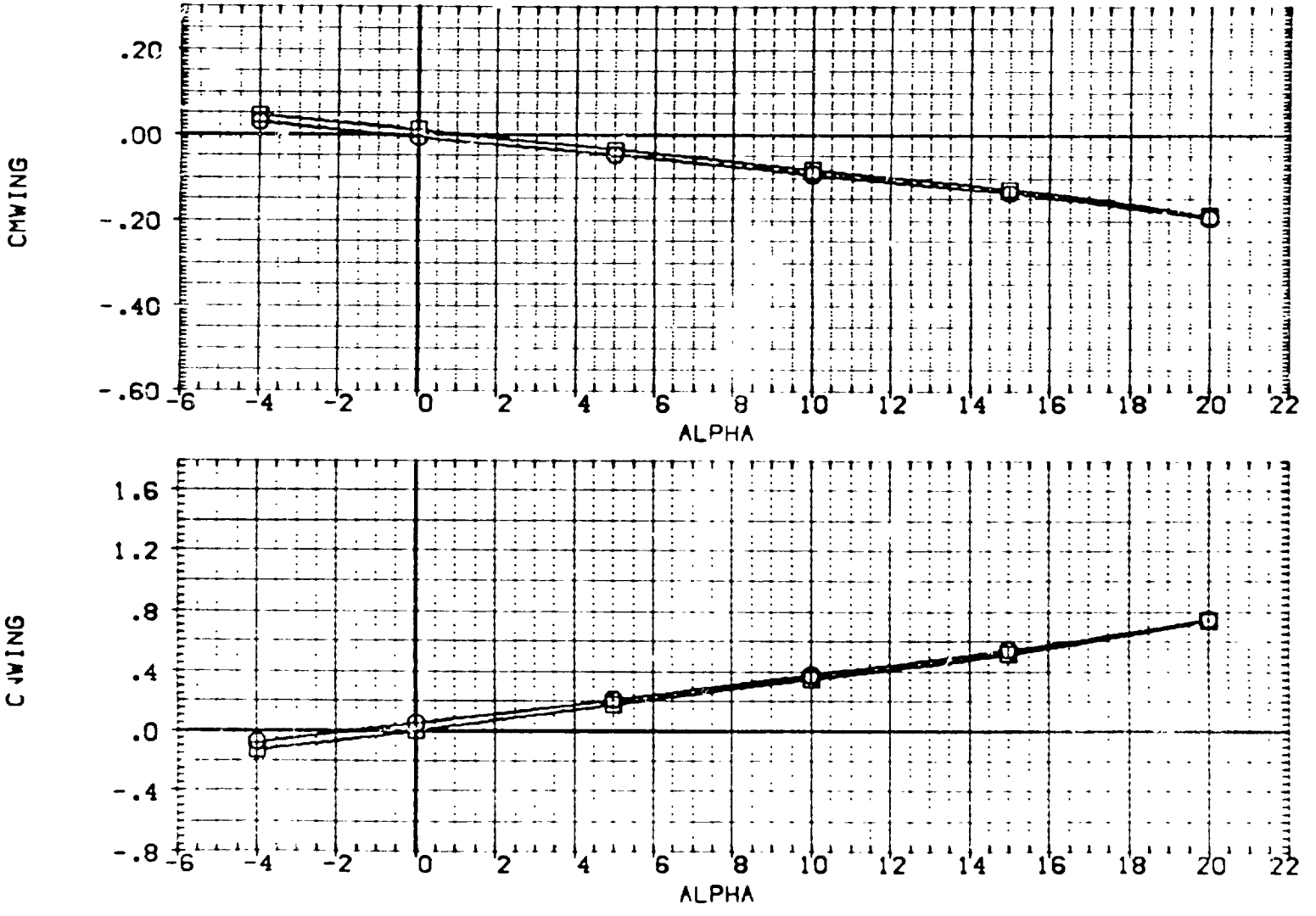

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

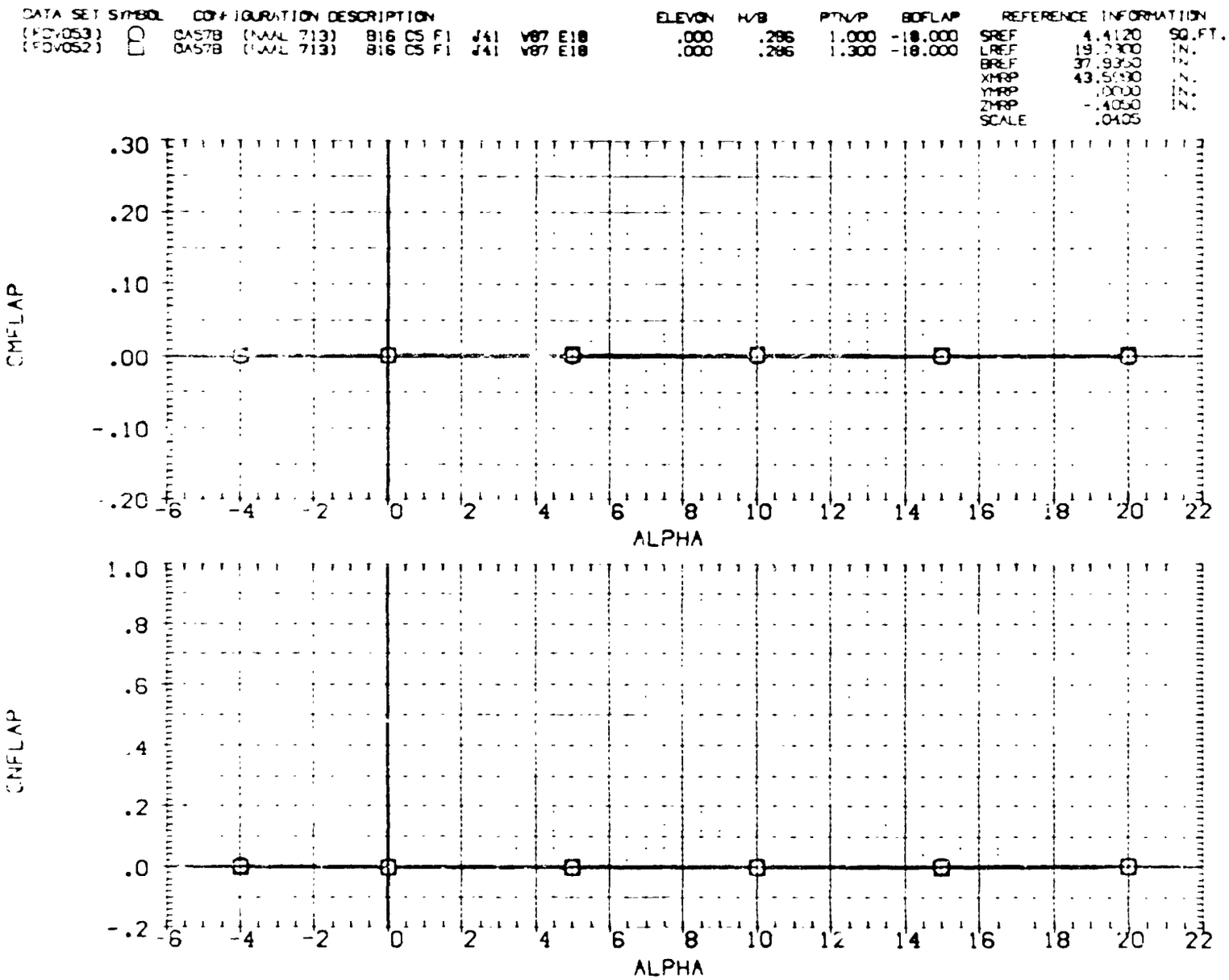

FIG. 30 INTEGRATED FORCE COEFFICIENTS WITH J41 , 0 ELEVON AND -18 BOFLAP

(A)MACH = .20

	ELEVON	H/B	PTN/P	BOFLAP
[illegible]	.000	.286	1.000	-18.000
[illegible]	.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5900	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

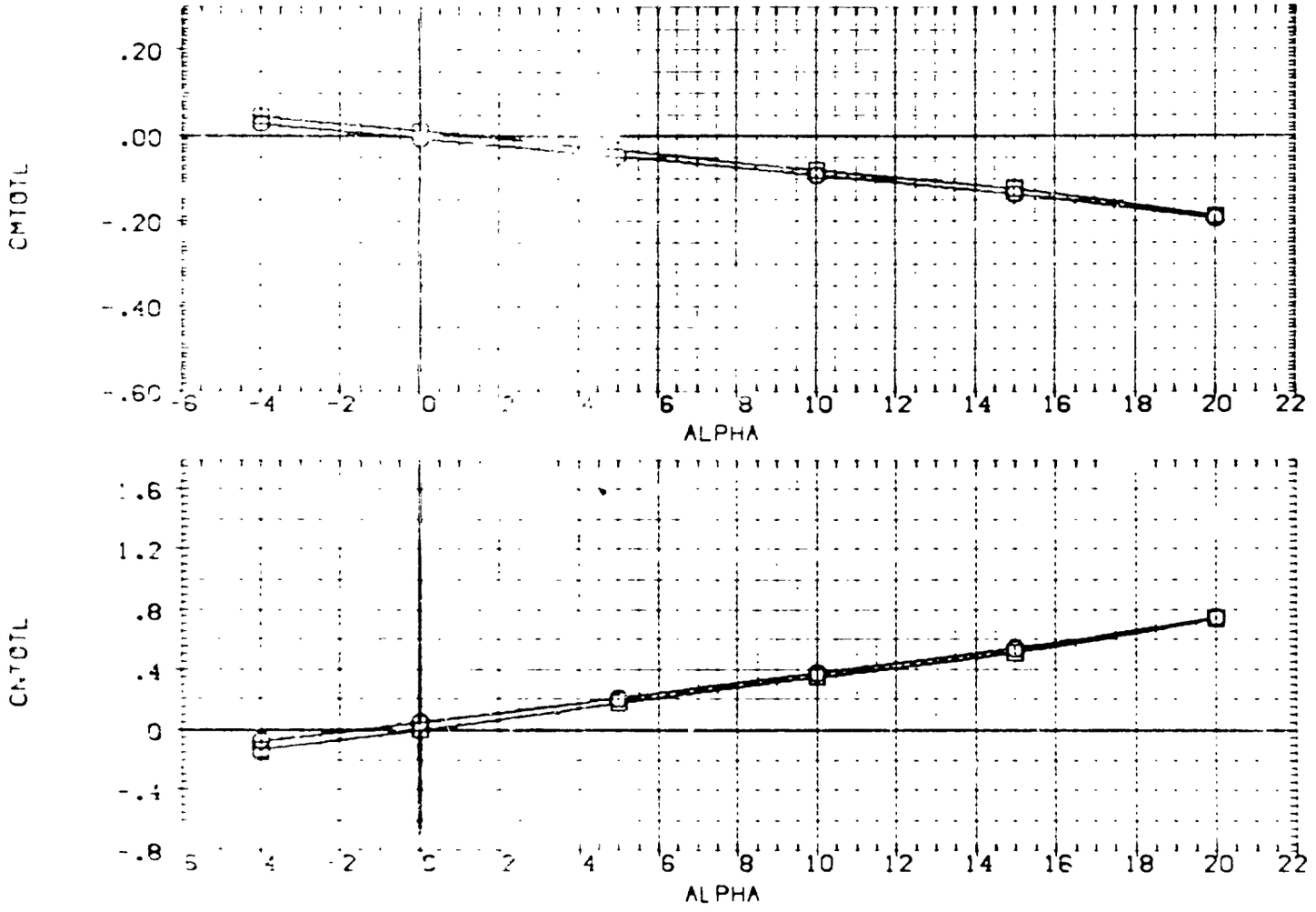

FIG. 3[illegible] [illegible]EFFICIENTS WITH J41 , 0 ELEVON AND -18 BOFLAP

[illegible]

DATA SET SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	P/N/P	BOFLAP
[illegible]	[illegible]	345°B	(NAL 713)	B16 CS F1	J41	V87 E18	15.000	.039	.000	-18.000
[illegible]	[illegible]	345°B	(NAL 713)	B16 CS F1	J41	V87 E18	15.000	.039	1.300	-18.000

REFERENCE INFORMATION

SREF	1.4[illegible]
LREF	9.[illegible]
BREF	.9[illegible]
XMRP	[illegible]
YMRP	.0[illegible]
ZMRP	-.4[illegible]
SCALE	.04[illegible]

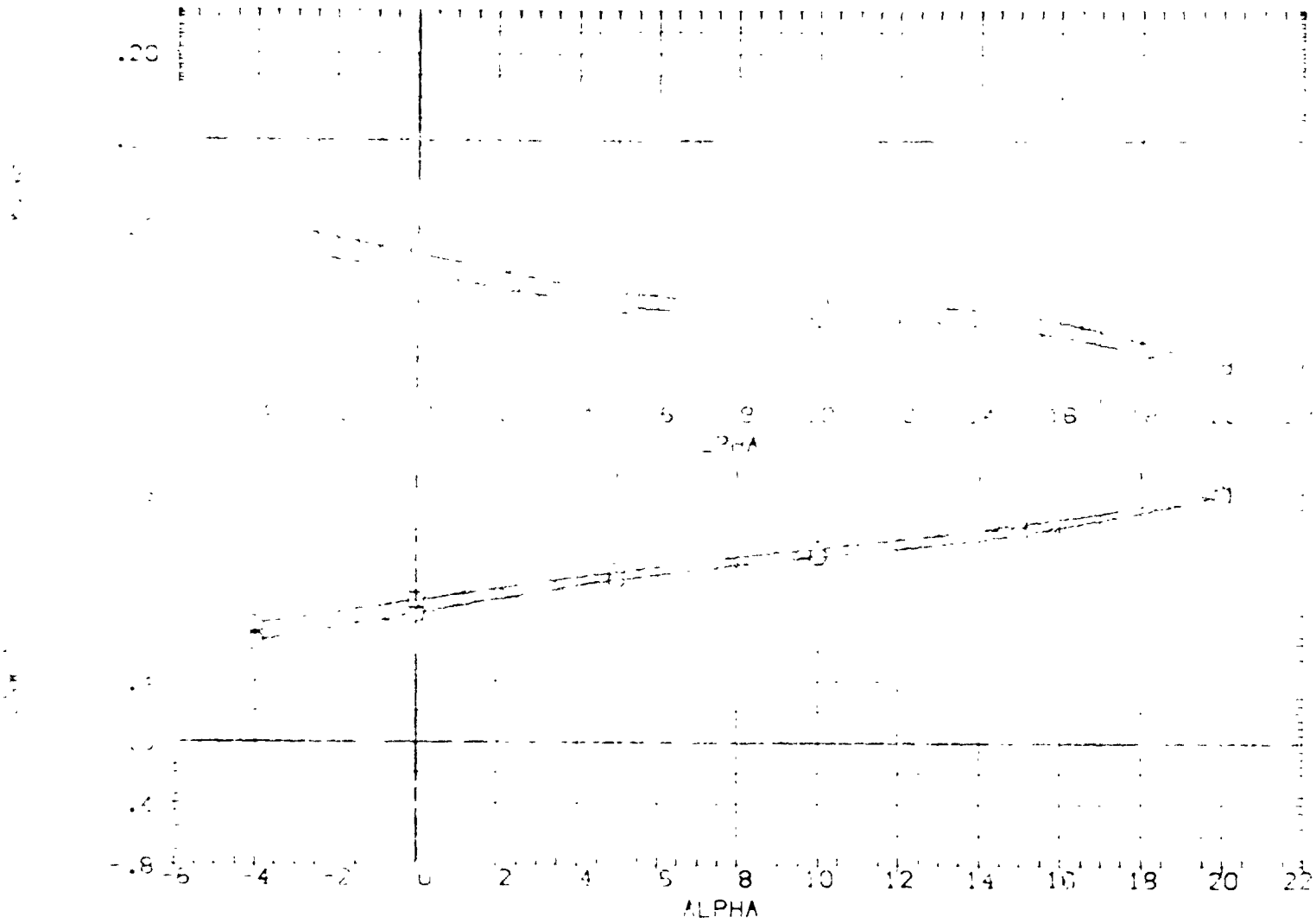

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41, 15 ELEVON AND -18 BOFLAP

DATA SET SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV049)	0A578	(NAAL 713)	B16 C5 F1	J41	V87 E18		15.000	.039	1.000	-18.000
(FDV048)	0A578	(NAAL 713)	B16 C5 F1	J41	V87 E18		15.000	.039	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

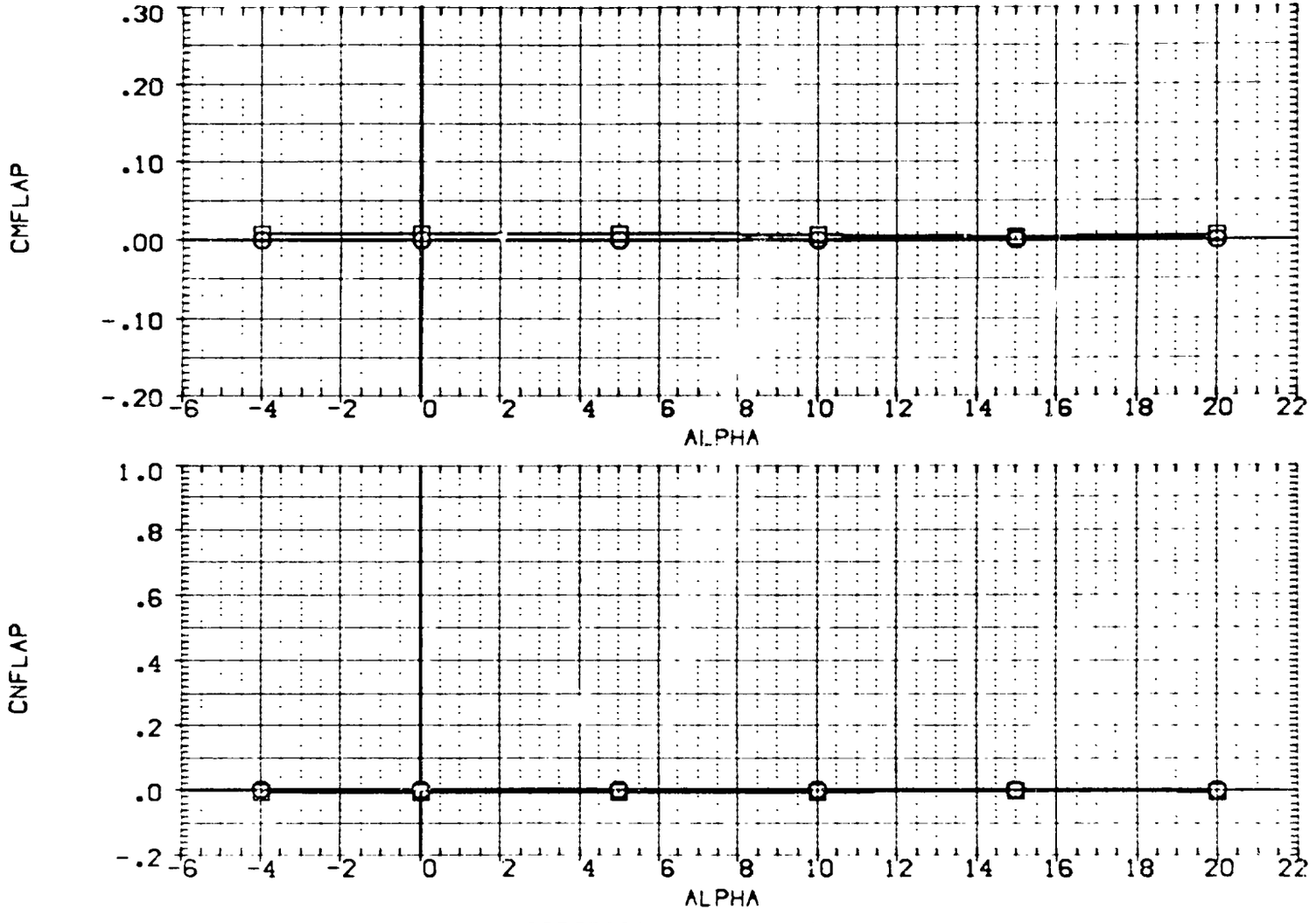

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

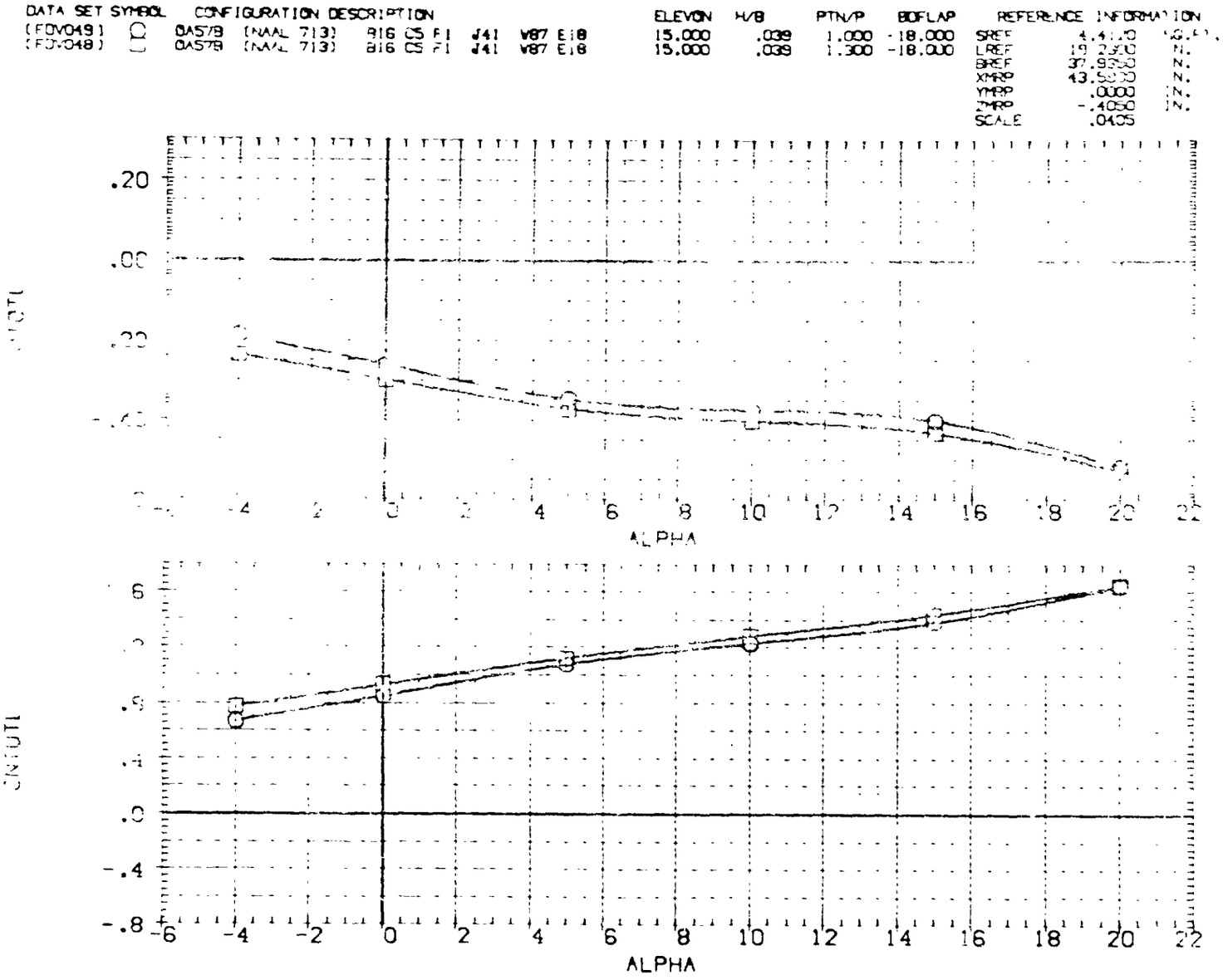

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MAC = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FOV047) ○	0A578 (NAAL 713) B16 C5 F1 J41 W87 E18	15.000	.125	1.000	-18.000
(FOV046) □	0A578 (NAAL 713) B16 C5 F1 J41 W87 E18	15.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

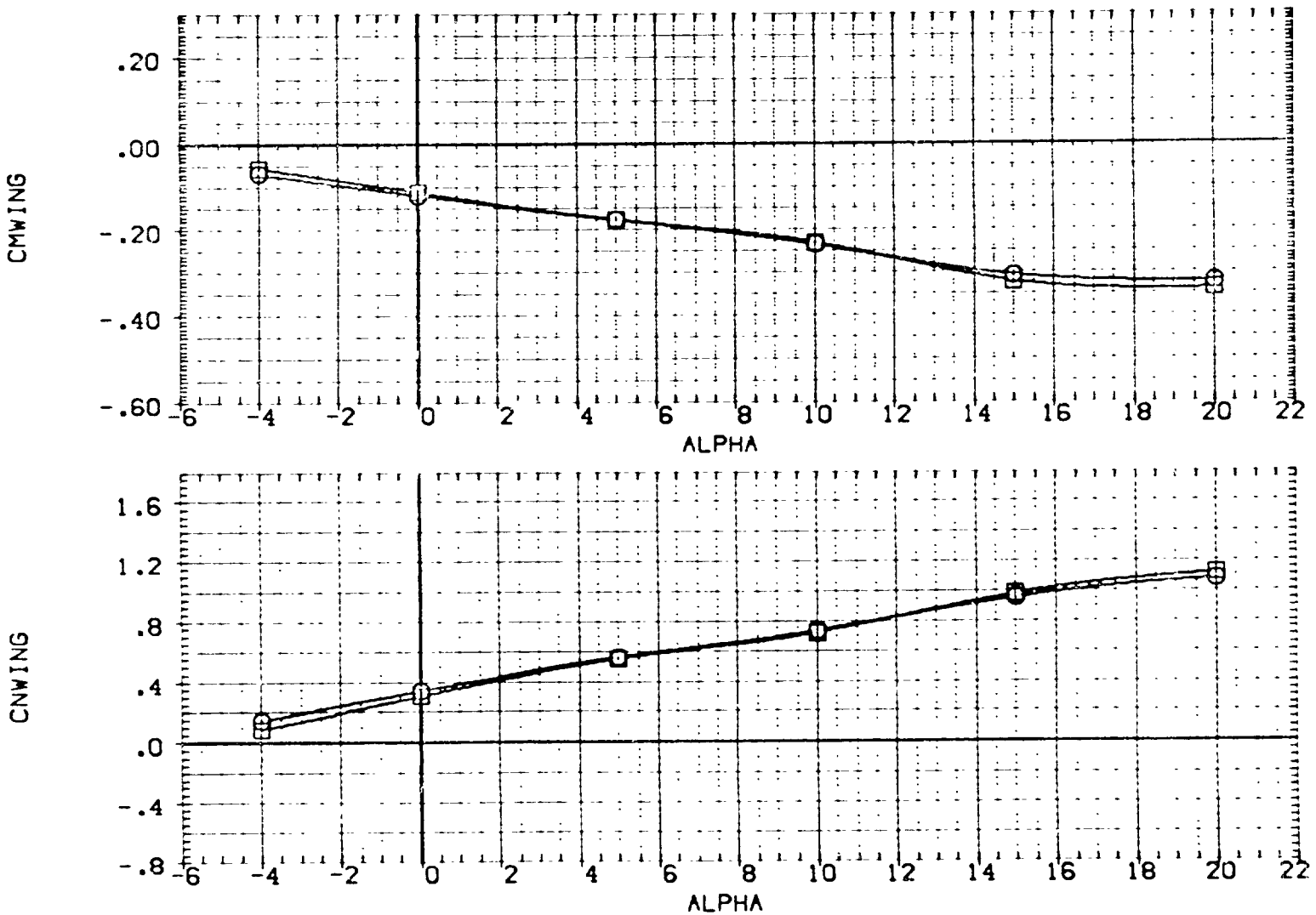

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV047) ○	0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.000	-18.000
(FDV046) □	0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

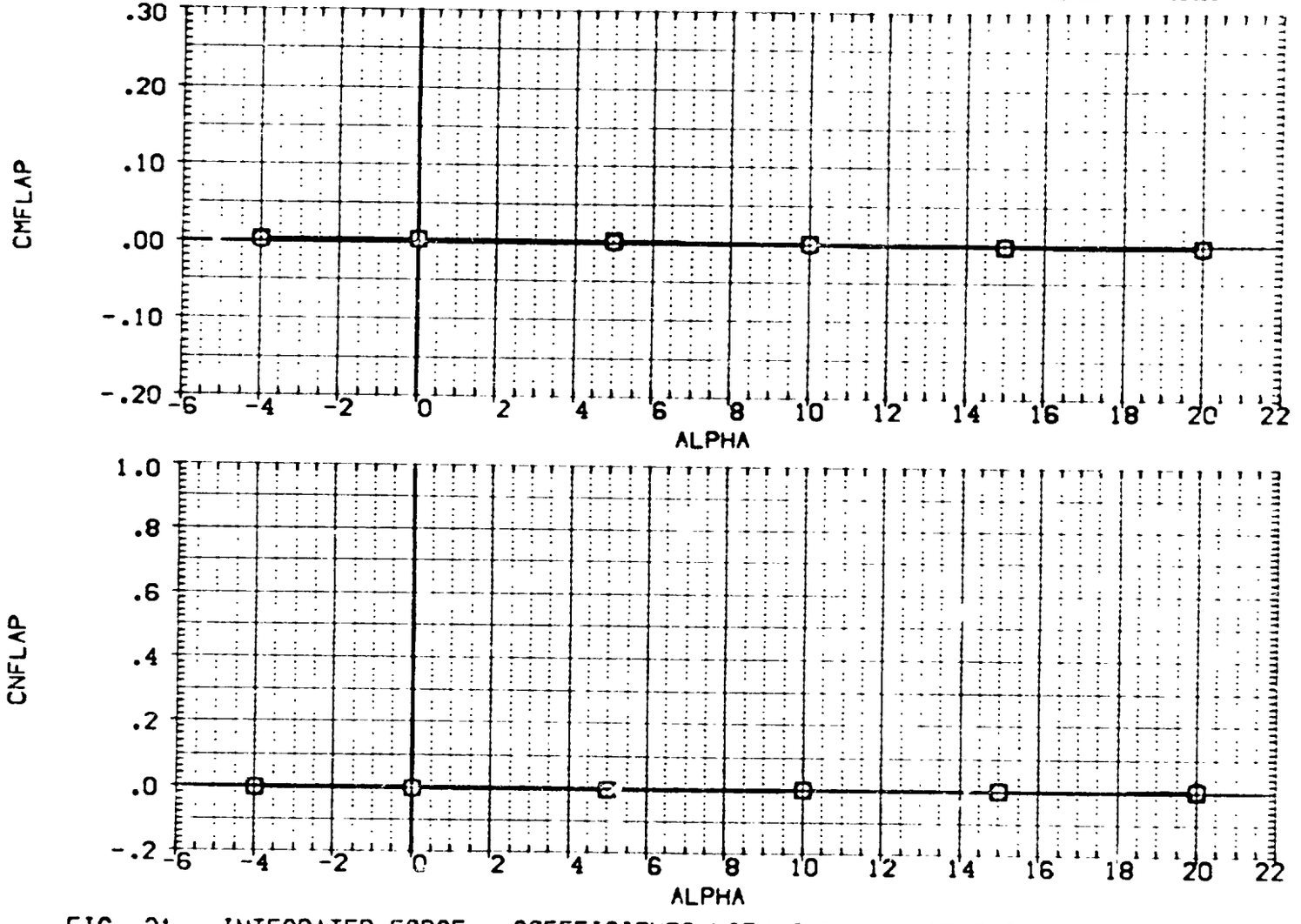

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV047) ○	0A578 (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.000	-18.000
(FDV046) □	0A578 (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5930	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

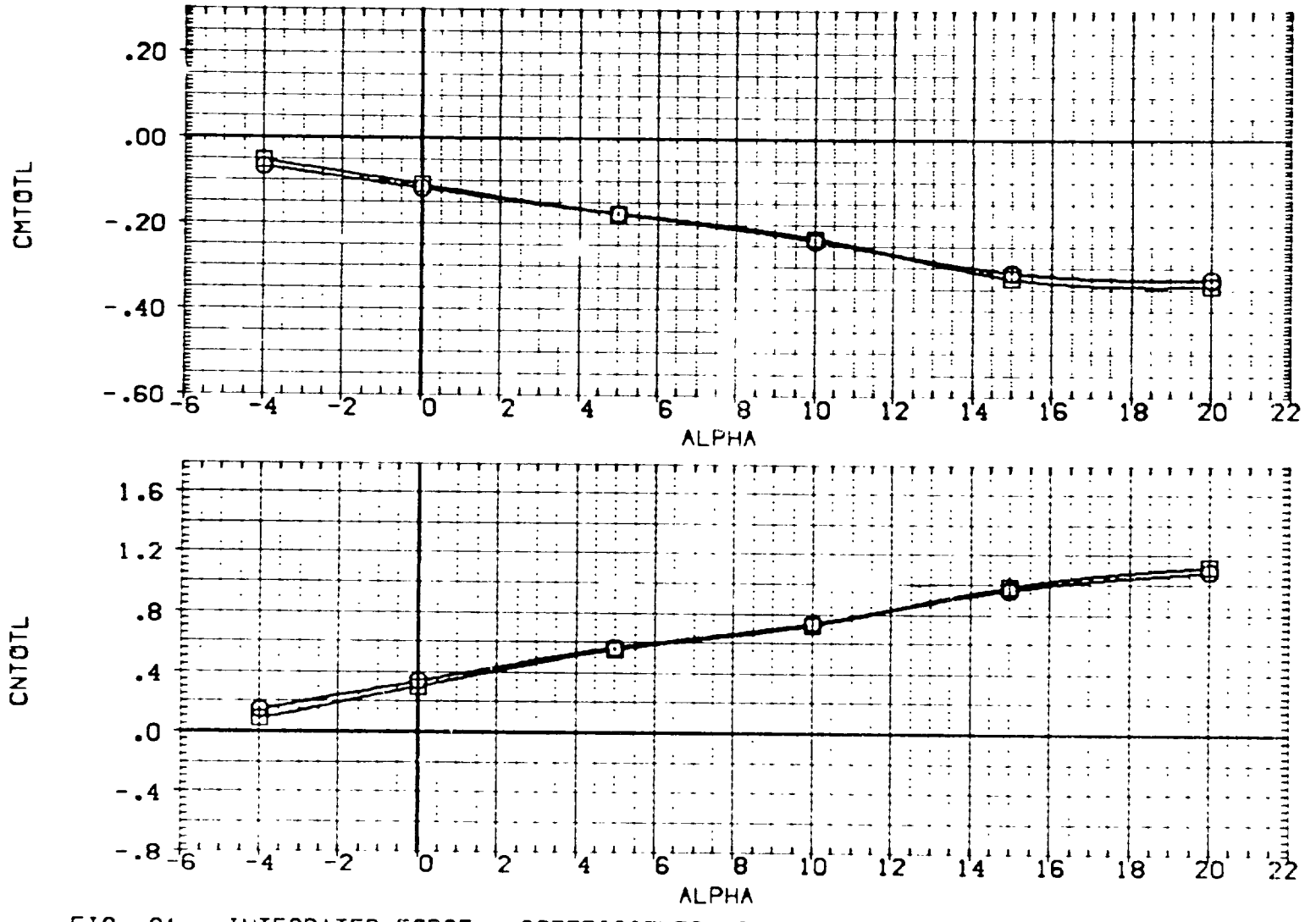

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV051)	□	CA578	(NAAL 713)	B16 C5 F1	J41	V87 E18		15.000	.286	1.000	-18.000
(FDV050)	□	CA578	(NAAL 713)	B16 C5 F1	J41	V87 E18		15.000	.286	1.300	-18.000

REFERENCE INFORMATION

SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.5350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

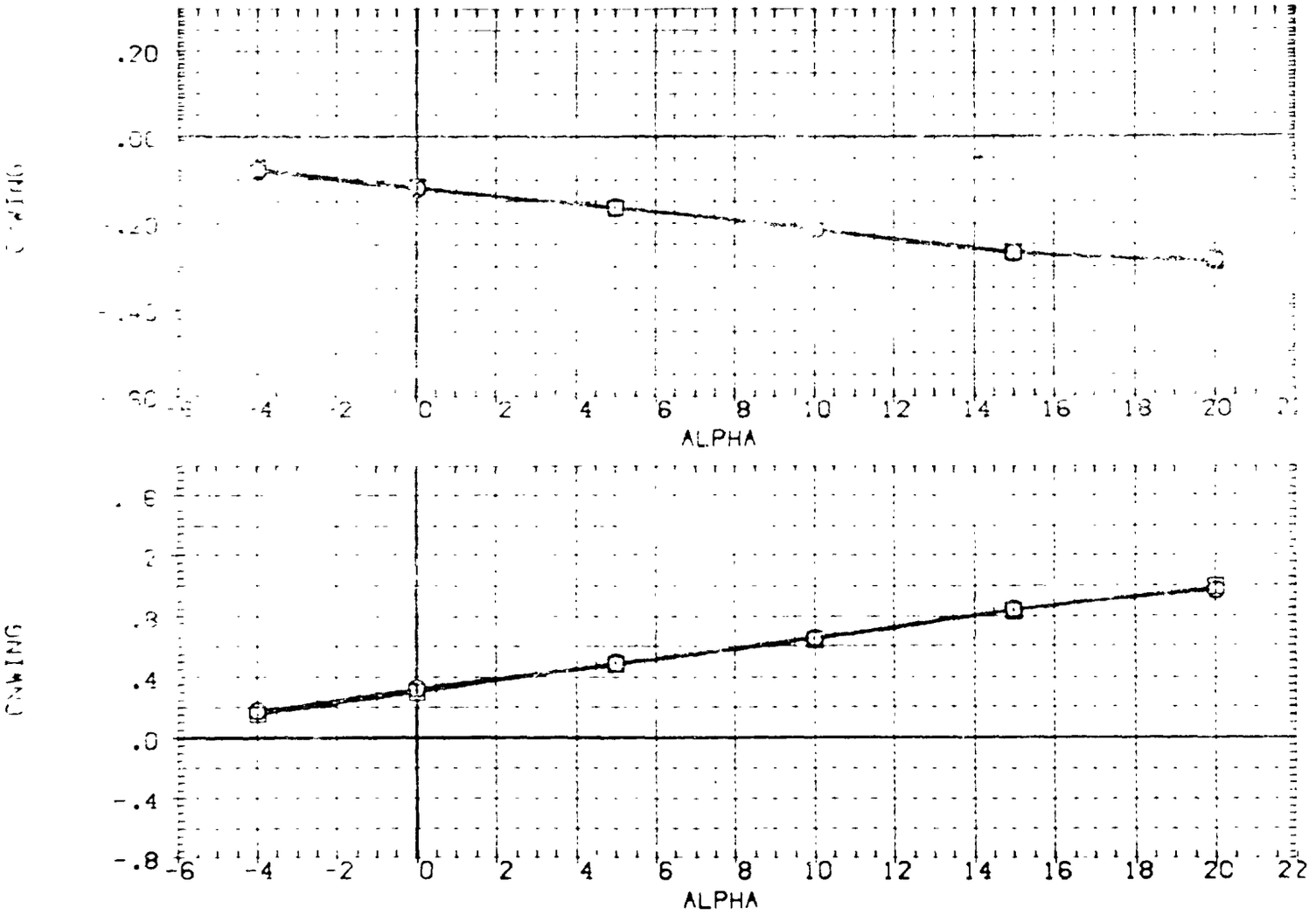

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV051)	○	OA578 (NAAL 713) B16 C5 F1 J41 W87 E18	15.000	.286	1.000	-18.000
(FDV050)	□	OA578 (NAAL 713) B16 C5 F1 J41 W87 E18	15.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5[illegible]30	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

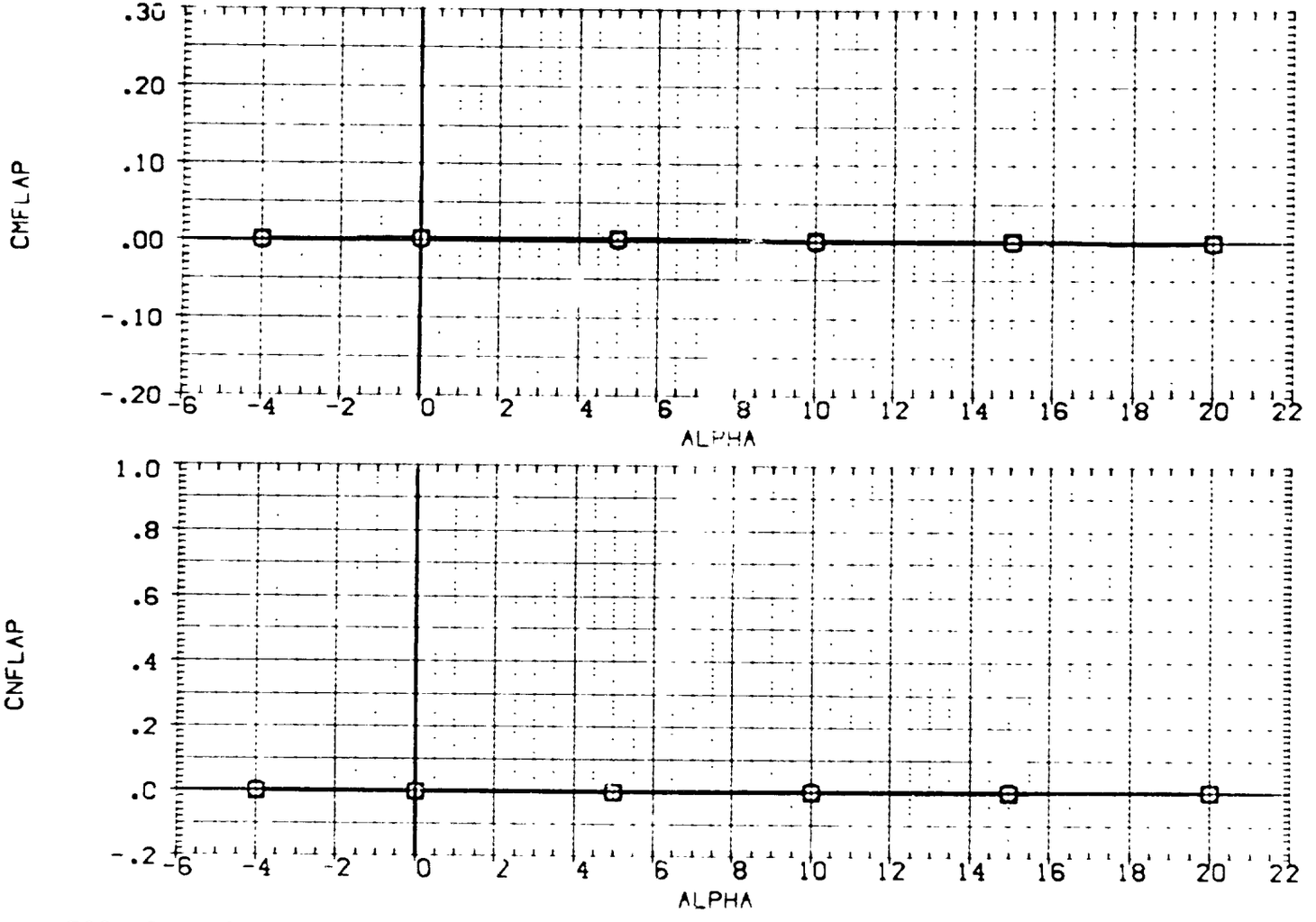

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV051)	□	BAS78 (NAAL 713) B16 CS F1 J41 V87 E18	15.000	.286	1.000	-18.000
(FDV050)	○	BAS78 (NAAL 713) B16 CS F1 J41 V87 E18	15.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.6500	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

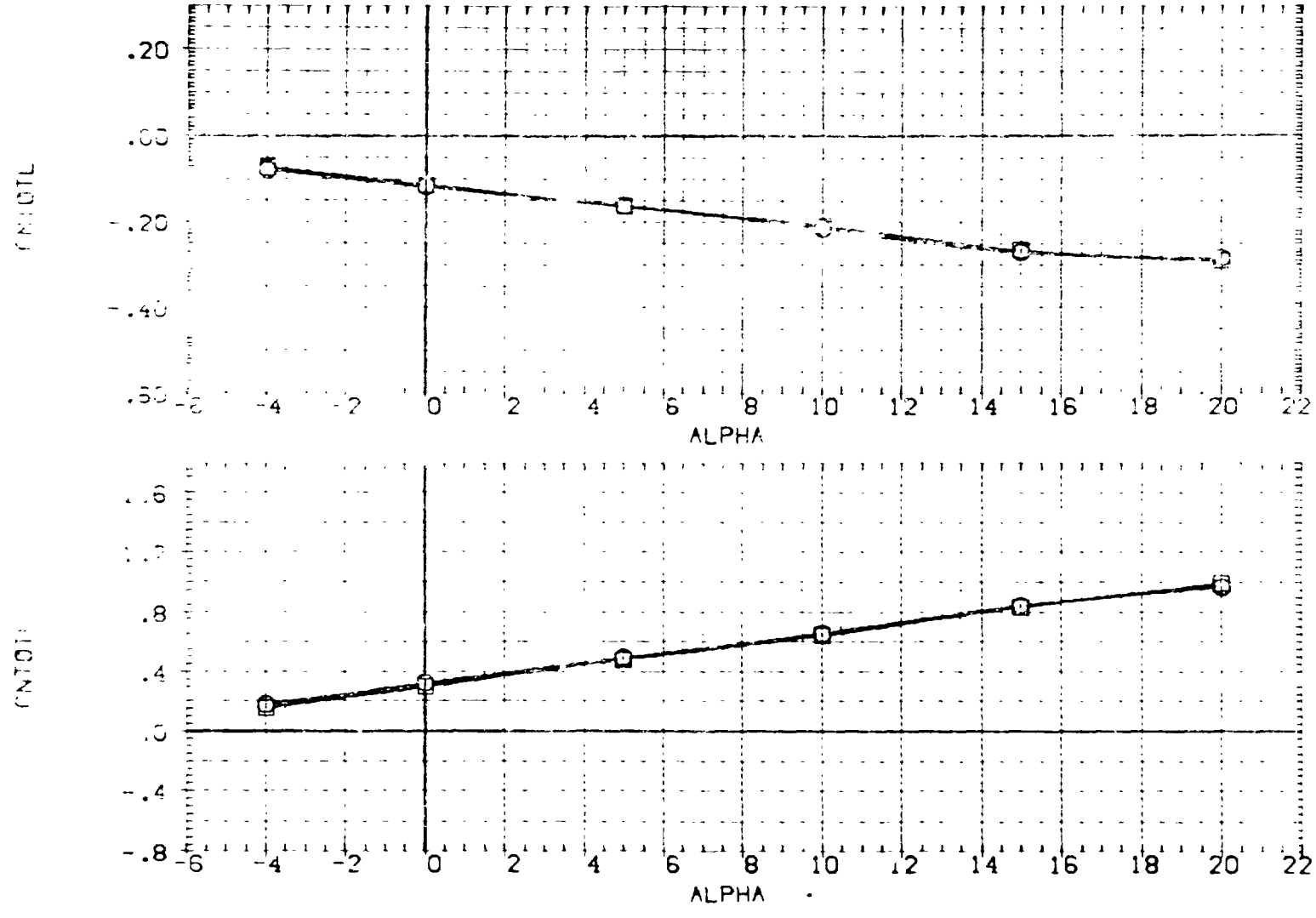

FIG. 31 INTEGRATED FORCE COEFFICIENTS WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(HDV064)	□	0A578 (NAAL 713)	B16 C5 F1	J42	W87 E18		.000	.039	1.000	-18.000
(HDV063)	△	0A578 (NAAL 713)	B16 C5 F1	J42	W87 E18		.000	.039	1.300	-18.000
(YDVK62)	◇	0A578 (NAAL 713)	B16 C5 F1	J42	W87 E18		.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

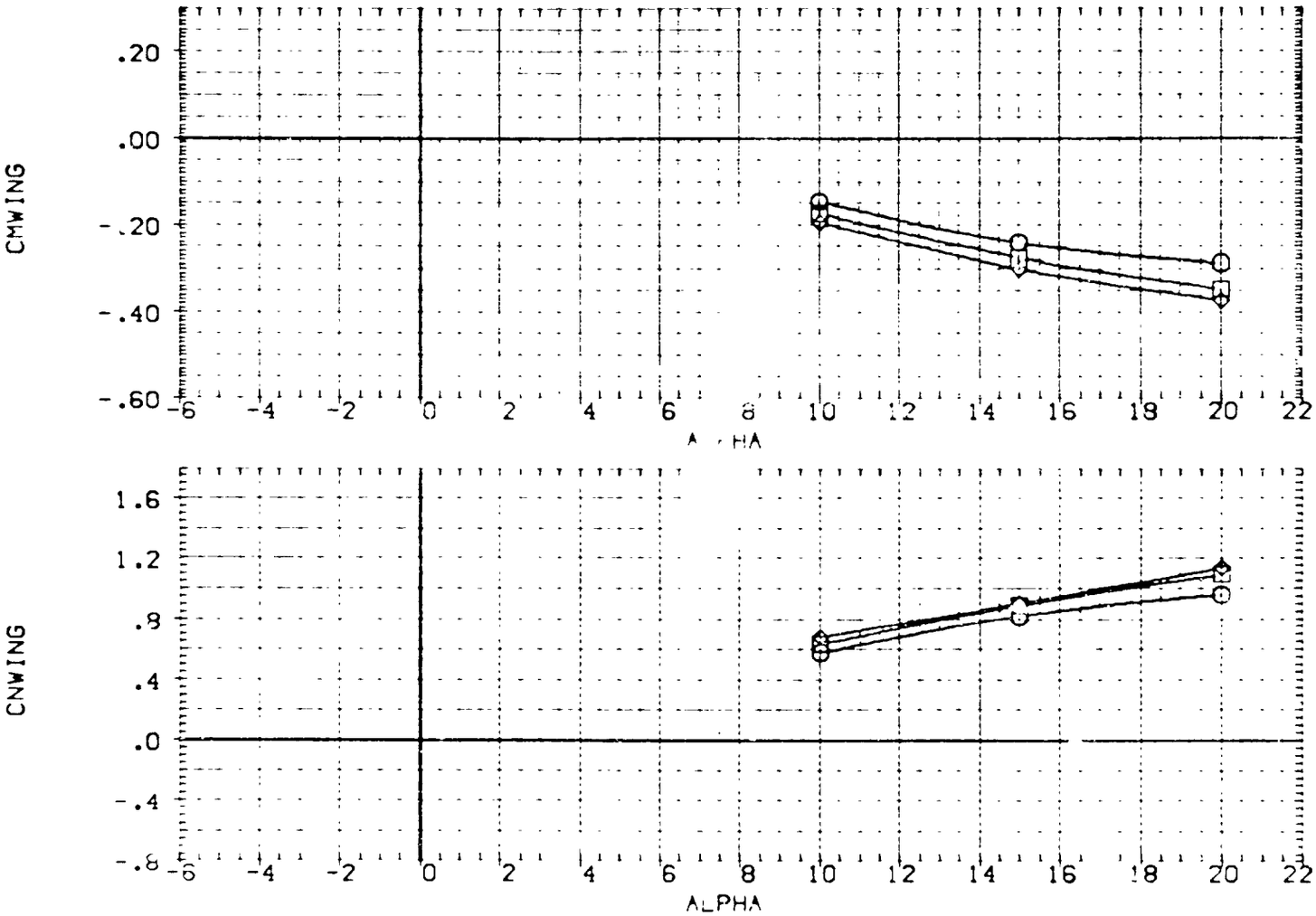

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON , BDFLAP

(A)MACH =

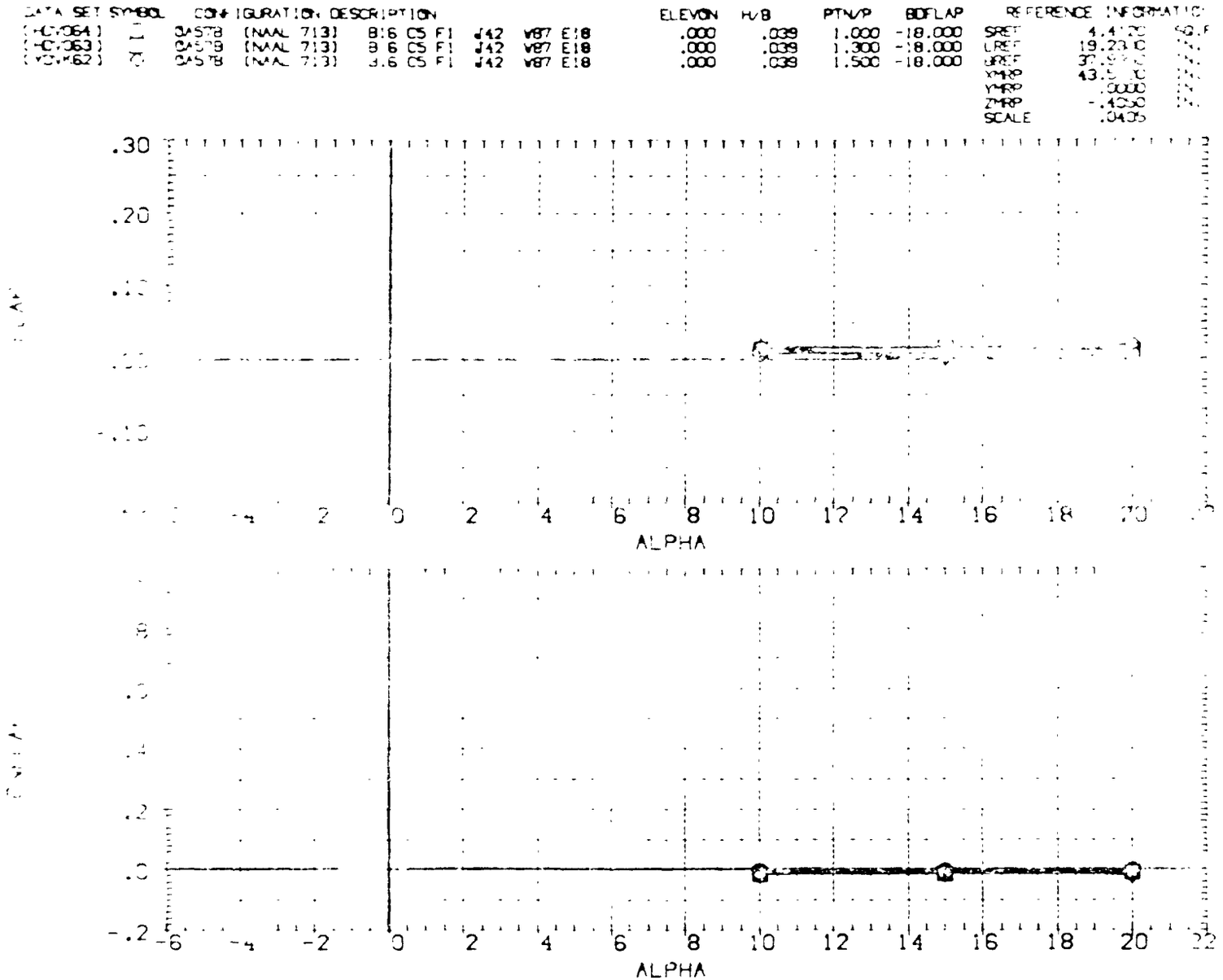

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(HOV064)	□	0A578	(NAAL 713)	B16 C5 F1	J42	W87	E18	.000	.039	1.000	-18.000
(HOV063)	◇	0A578	(NAAL 713)	B16 C5 F1	J42	W87	E18	.000	.039	1.300	-18.000
(HOV062)	◇	0A578	(NAAL 713)	B16 C5 F1	J42	W87	E18	.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5530	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

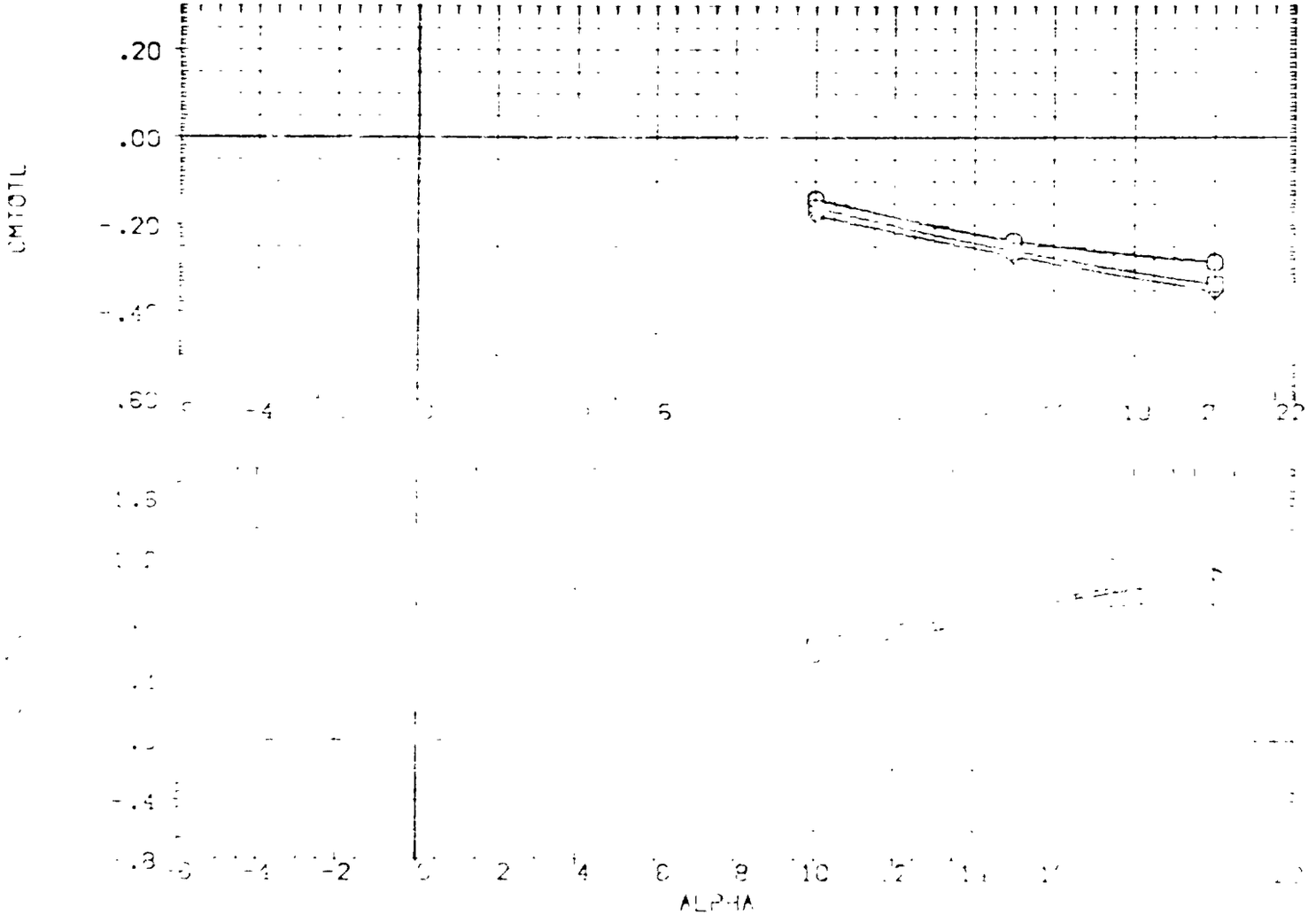

FIG. 32 INTEGRATED FORCE COEFFICIENTS J42 ELEV

DATA SET	SYMBOL	CONF	DURATION	DESCRIPTION				ELEVON	H/B	PTN/P	BDFLAP
(FD:061)		0A57B	(NAAL 7:3)	B:6 C5 F1	J42	W87	E18	.000	.125	1.000	-18.000
(FD:060)		0A57B	(NAAL 7:3)	B:6 C5 F1	J42	W87	E18	.000	.125	.300	-18.000
(FD:059)		0A57B	(NAAL 7:3)	B:6 C5 F1	J42	W87	E18	.000	.125	.500	-18.000

REFERENCE INFORMATION		
SREF	4.4 [illegible]	SQ.FT.
LREF	19.2 [illegible]	IN.
BREF	3 [illegible]	IN.
XMRP	43 [illegible]	IN.
YMRP	.000	IN.
ZMRP	-1 [illegible]	IN.
SCALE	.04 [illegible]	

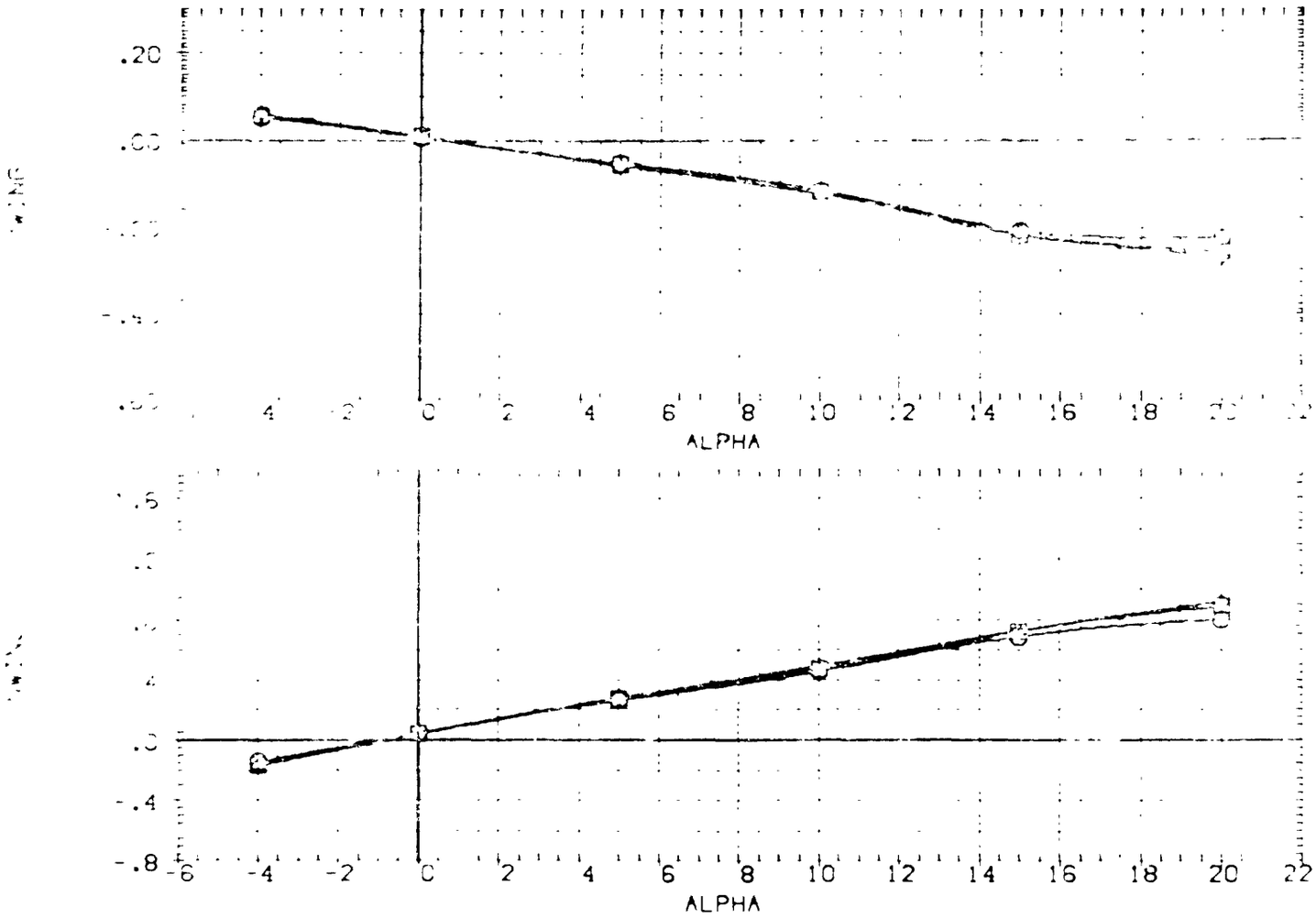

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .2[illegible]

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BU-LAP
(FDV036)	□	GA578	(NAAL 2[3]	B16 C5 F1	J42	V87	E18	.000	.125	1.000	-18.000
(FDV060)	○	GA578	(NAAL 2[3]	B16 C5 F1	J42	V87	E18	.000	.125	1.300	-18.000
(FDV059)	◇	GA578	(NAAL 2[3]	B16 C5 F1	J42	V87	E18	.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ FT.
LREF	19.2300	IN.
BREF	37.9360	IN.
XMRP	43.5080	
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

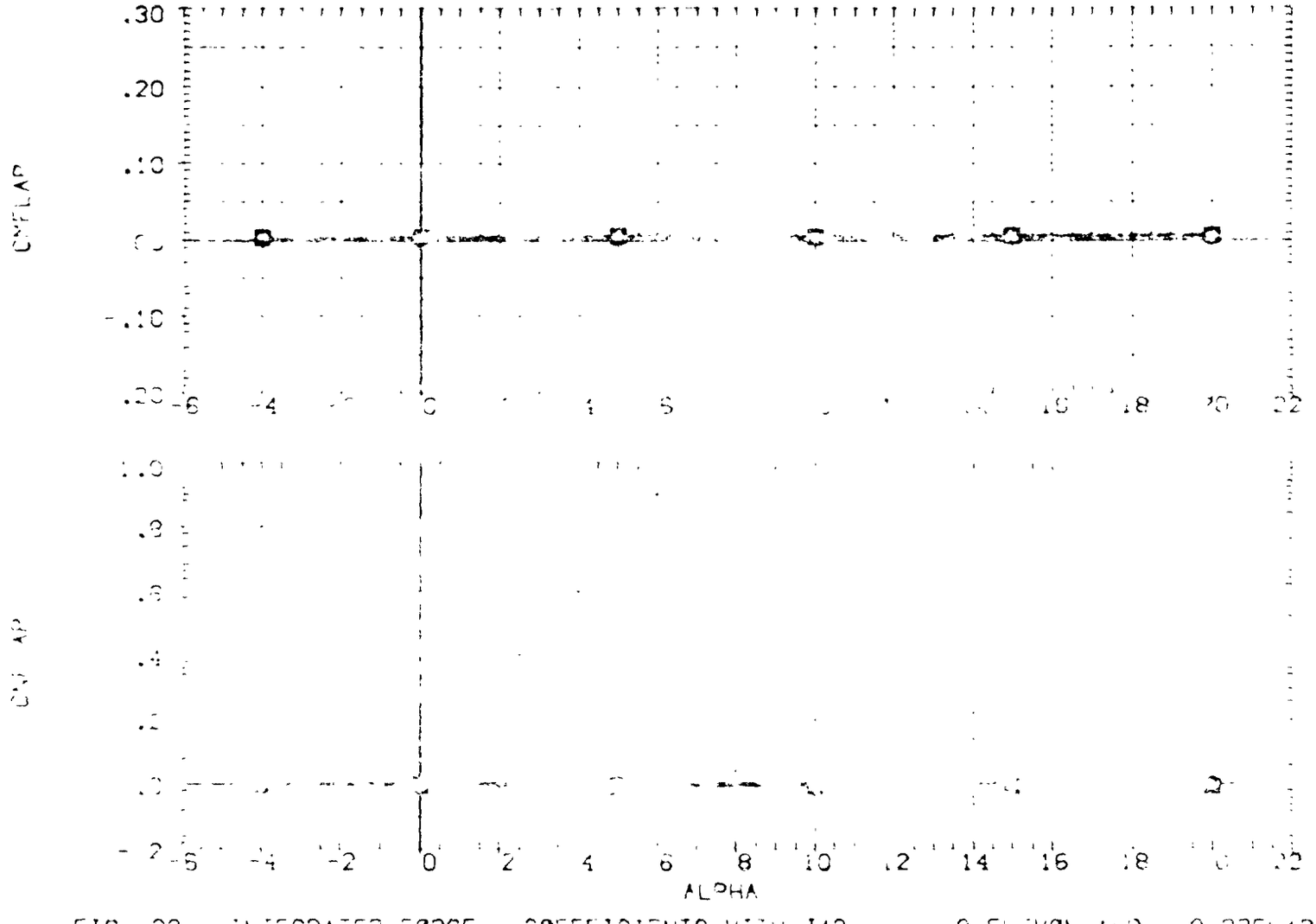

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON [illegible] -.9 BOFLAP

(A)MACH - .20

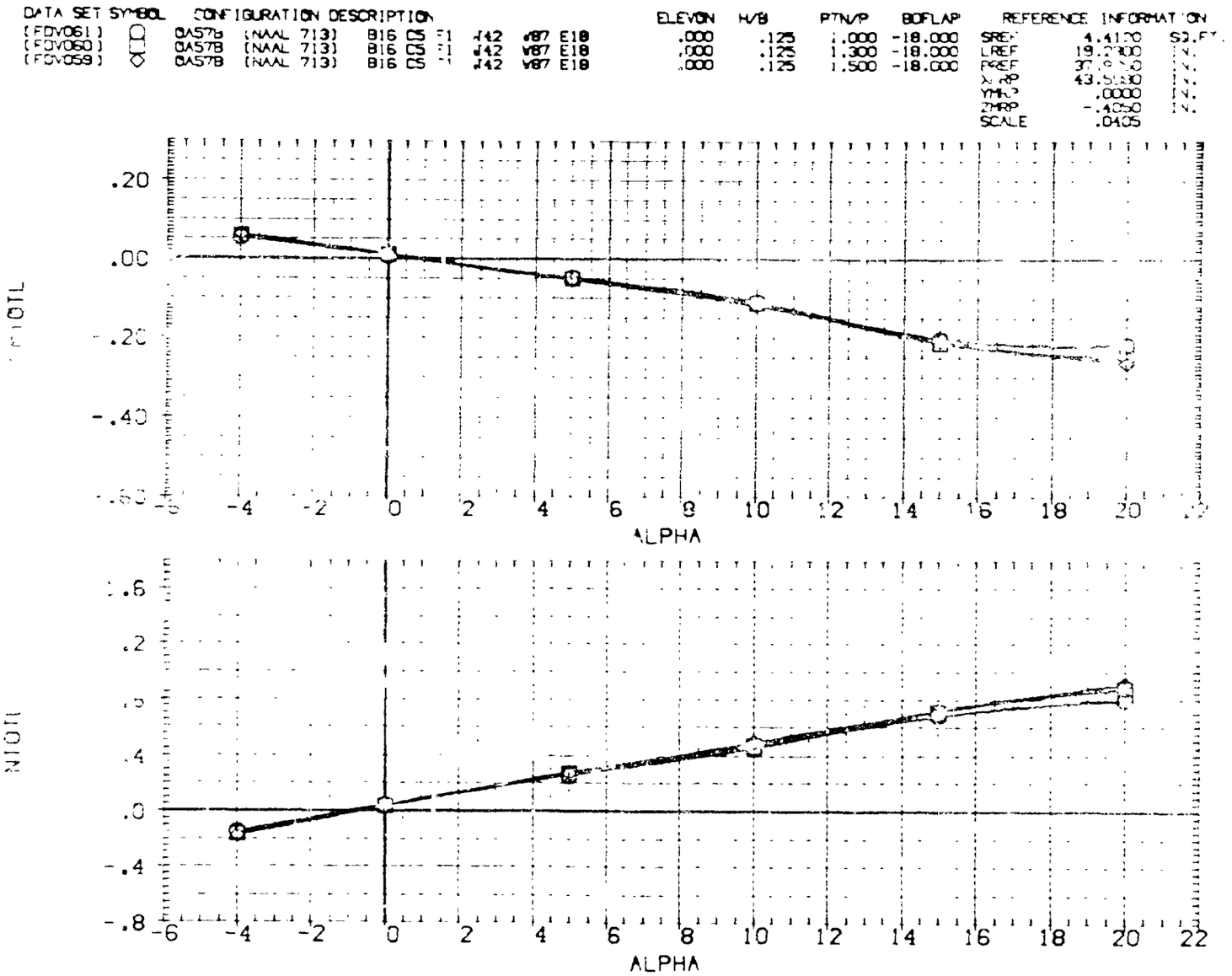

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BOFLAP
(FDV070)	□	0A578 (NAAL 713) B16 C5 F1 J42 V87 E18	.000	.286	1.000	-18.0001
(FDV069)	□	0A578 (NAAL 713) B16 C5 F1 J42 V87 E18	.000	.286	1.300	-18.0001
(FDV068)	◇	0A578 (NAAL 713) B16 C5 F1 J42 V87 E18	.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5030	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

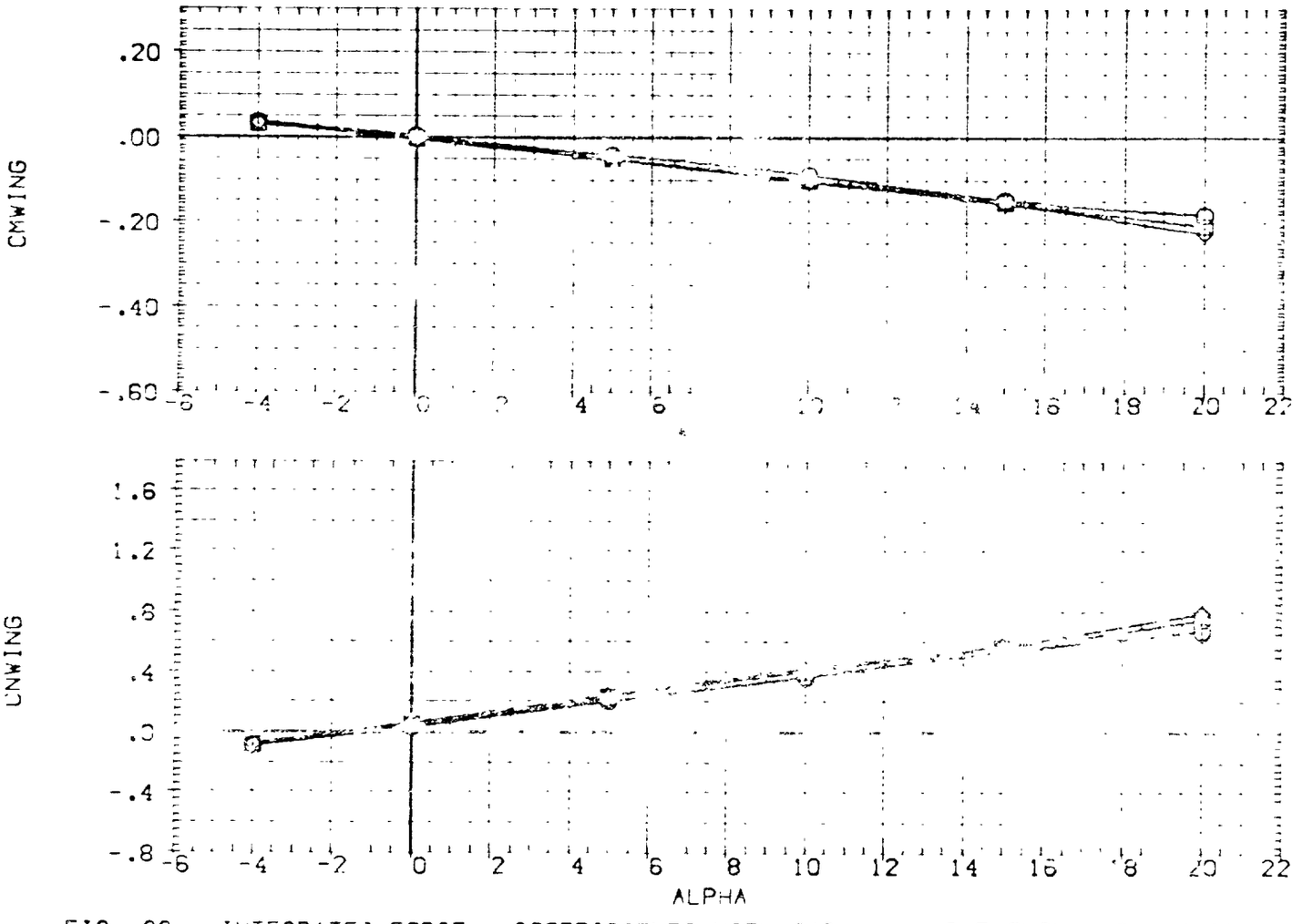

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 . 0 ELEVON AND -18 BOFLAP

(A)MACH = .2[illegible]

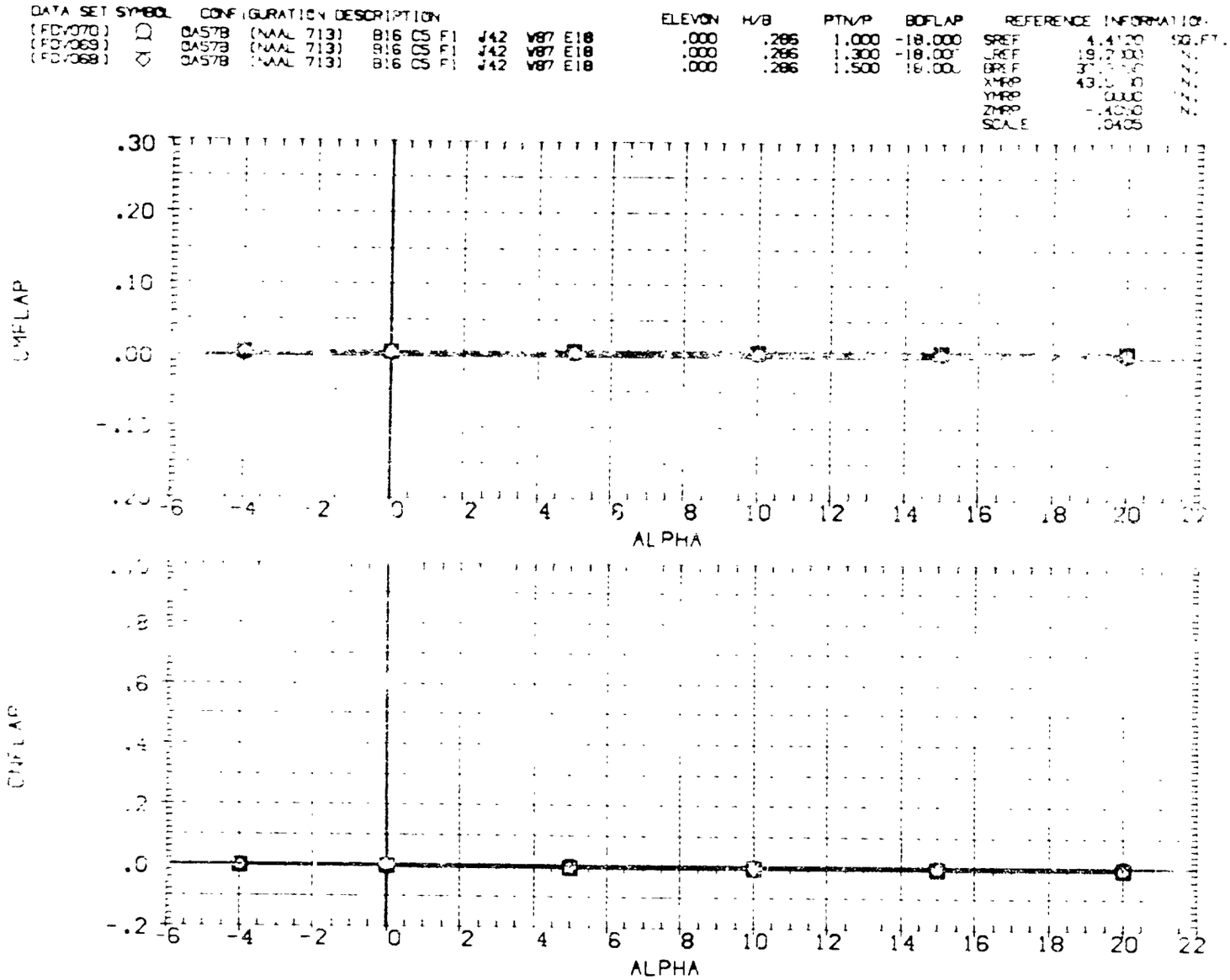

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 . 0 ELEVON AND -18 BOFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV070)	□	0A57B	(NAAL 713)	B16 C5 F1	J42	V87	E18	.000	.286	1.000	-18.000
(FDV069)	◇	0A57B	(NAAL 713)	B16 C5 F1	J42	V87	E18	.000	.286	1.300	-18.000
(FDV068)	◇	0A57B	(NAAL 713)	B16 C5 F1	J42	V87	E18	.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5960	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

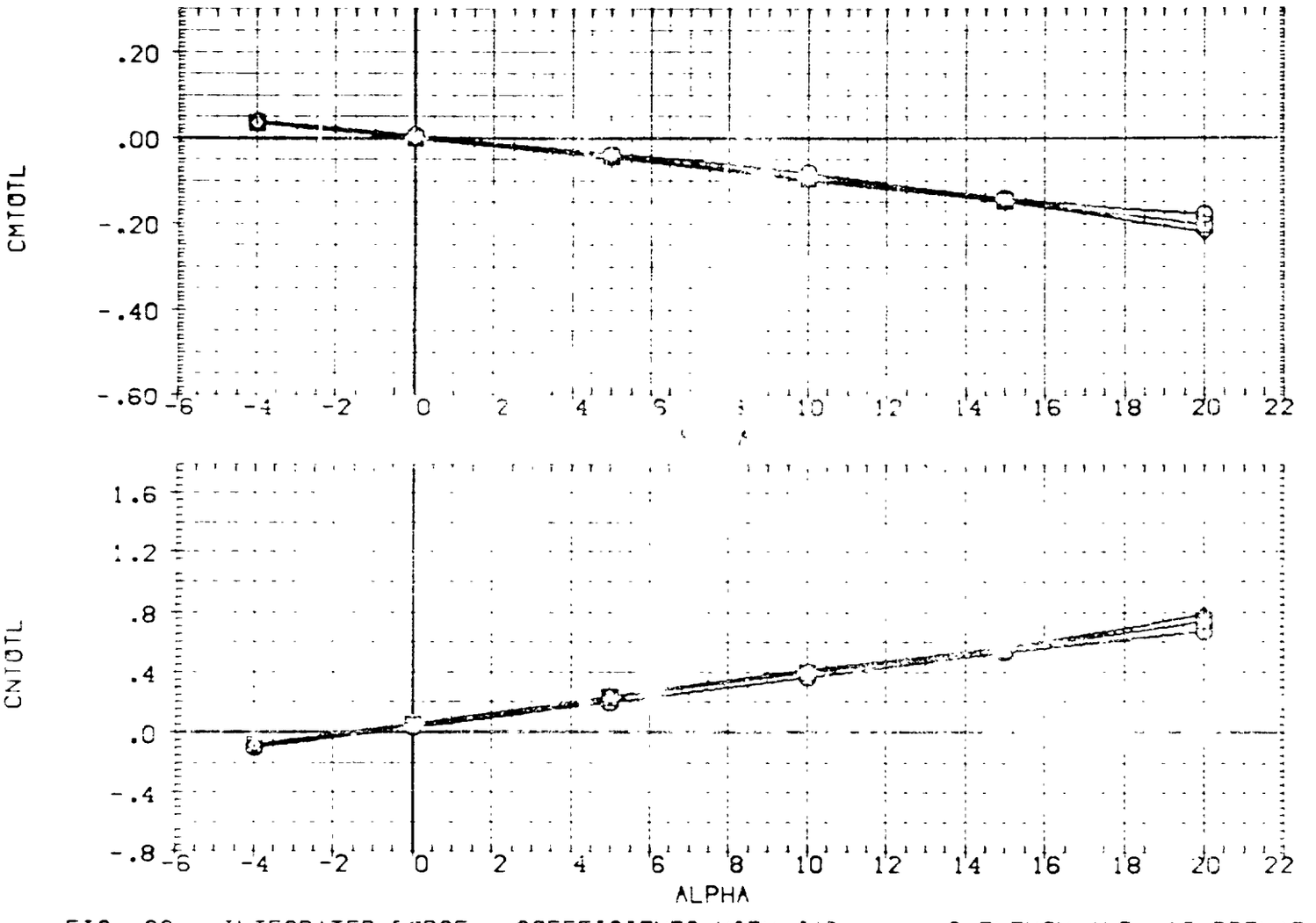

FIG. 32 INTEGRATED FORCE COEFFICIENTS WITH J42 , 0 ELEVON AND -18 BDFLAP

CA)MAC= = .[illegible]

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(4D:042)	□	0A57B	(NAAL 713)	B16	GS	F1	J40	W87 E18	-15.000	.039	1.000	-18.000
(4D:041)	△	0A57B	(NAAL 713)	B16	GS	F1	J40	W87 E18	-15.000	.039	1.300	-18.000
(4D:040)	◇	0A57B	(NAAL 713)	B16	GS	F1	J40	W87 E18	-15.000	.039	1.500	-18.000

REFERENCE INFORMATION

SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.3350	IN.
XMRP	43.5990	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

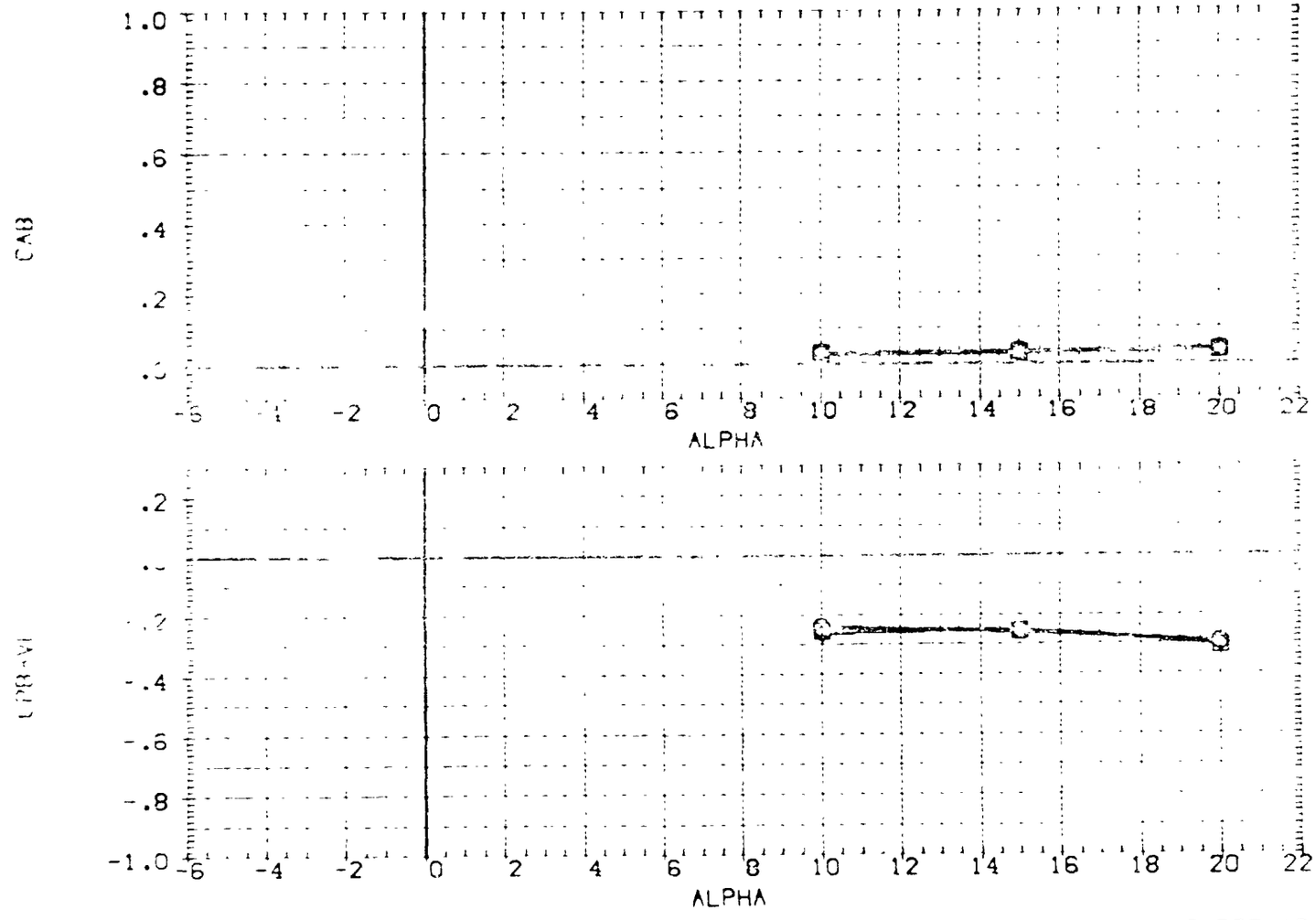

FIG. 33 BASE PRESSURE AND AXIAL FORCE WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

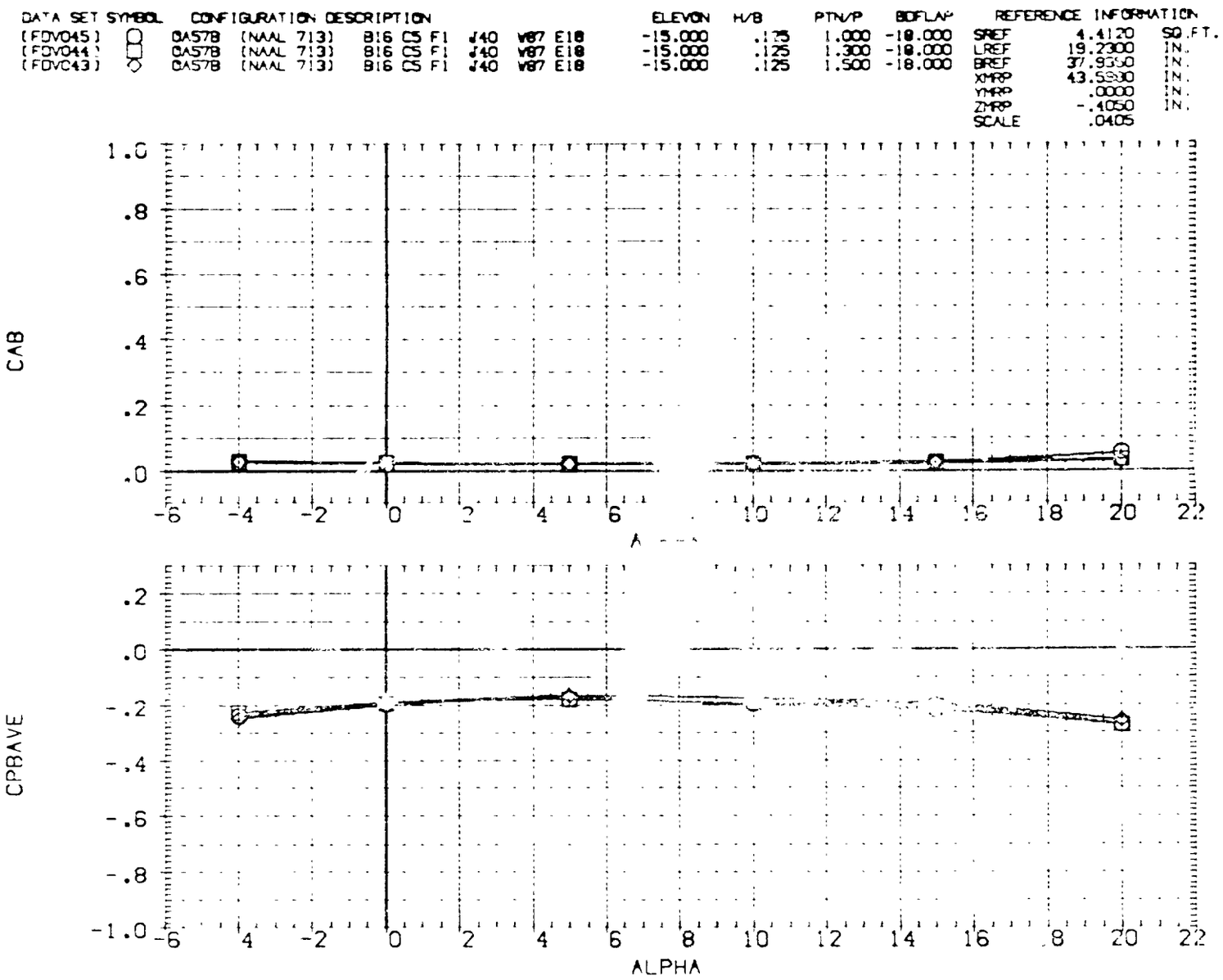

FIG. 33 BASE PRESSURE AND AXIAL FORCE WITH J40 , -15 ELEVON AND 18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV039)	◇	BA57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.286	1.000	-18.000
(FDV038)	□	BA57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.286	1.300	-18.000
(FDV037)	○	BA57B	(NAAL 713)	B16 CS F1	J40	V87 E18		-15.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9300	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

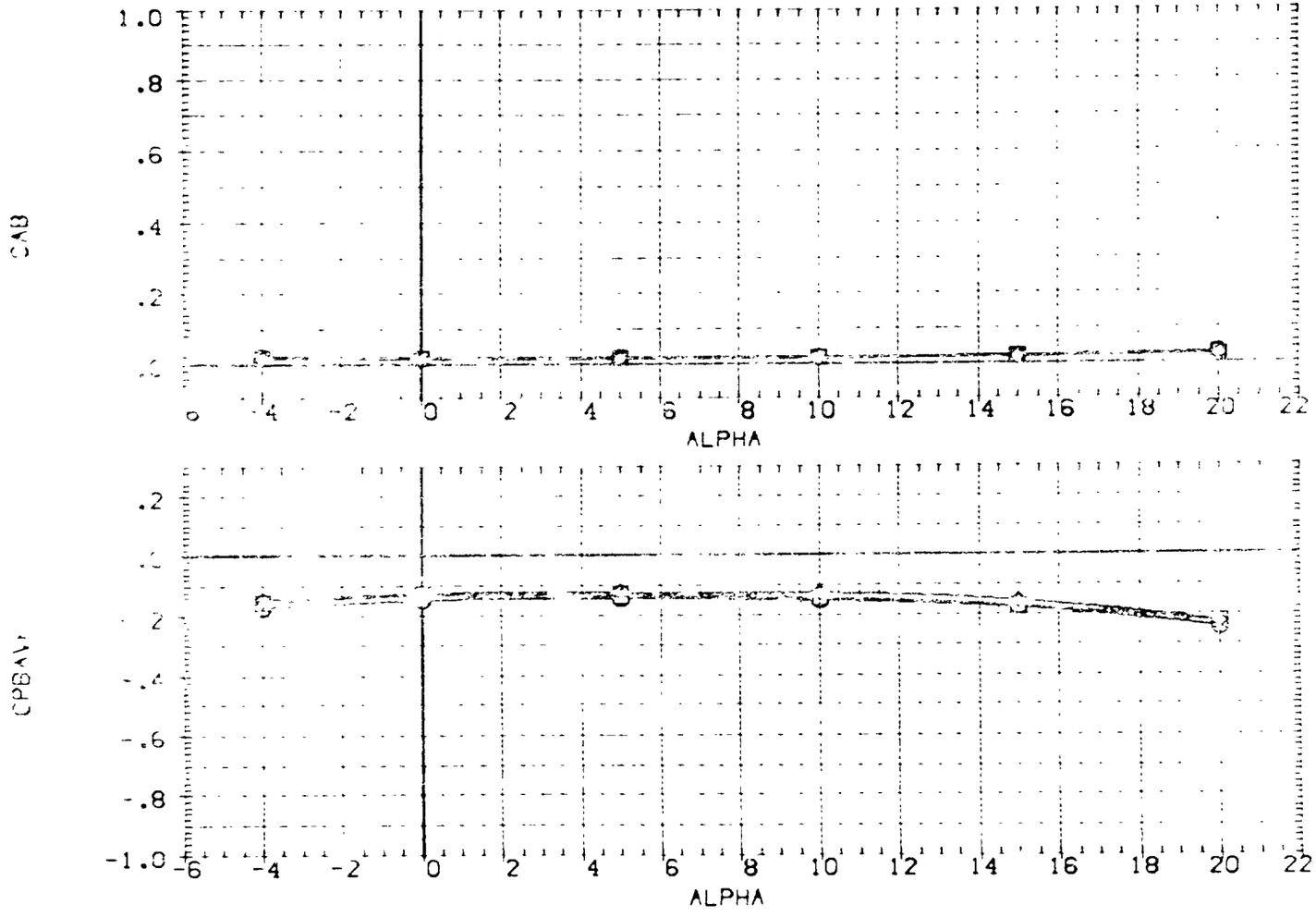

FIG. 33 BASE PRESSURE AND AXIAL FORCE WITH J40 , -15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
[HDV003]	□	0A578	(NAAL 713)	B16 C5 F1	J40	V87 E18	.000	.039	1.000	-19.000
[HDV004]	○	0A578	(NAAL 713)	B16 C5 F1	J40	V87 E18	.000	.039	1.300	-18.000
[HDV005]	◇	0A578	(NAAL 713	B16 C5 F1	J40	V87 E18	.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.41??	SQ.FT.
LREF	19.2	IN.
BREF	37.9??	IN.
XMRP	43.598?	IN.
YMRP	.0000	IN.
ZMRP	-.1050	IN.
SCALE	.0405	

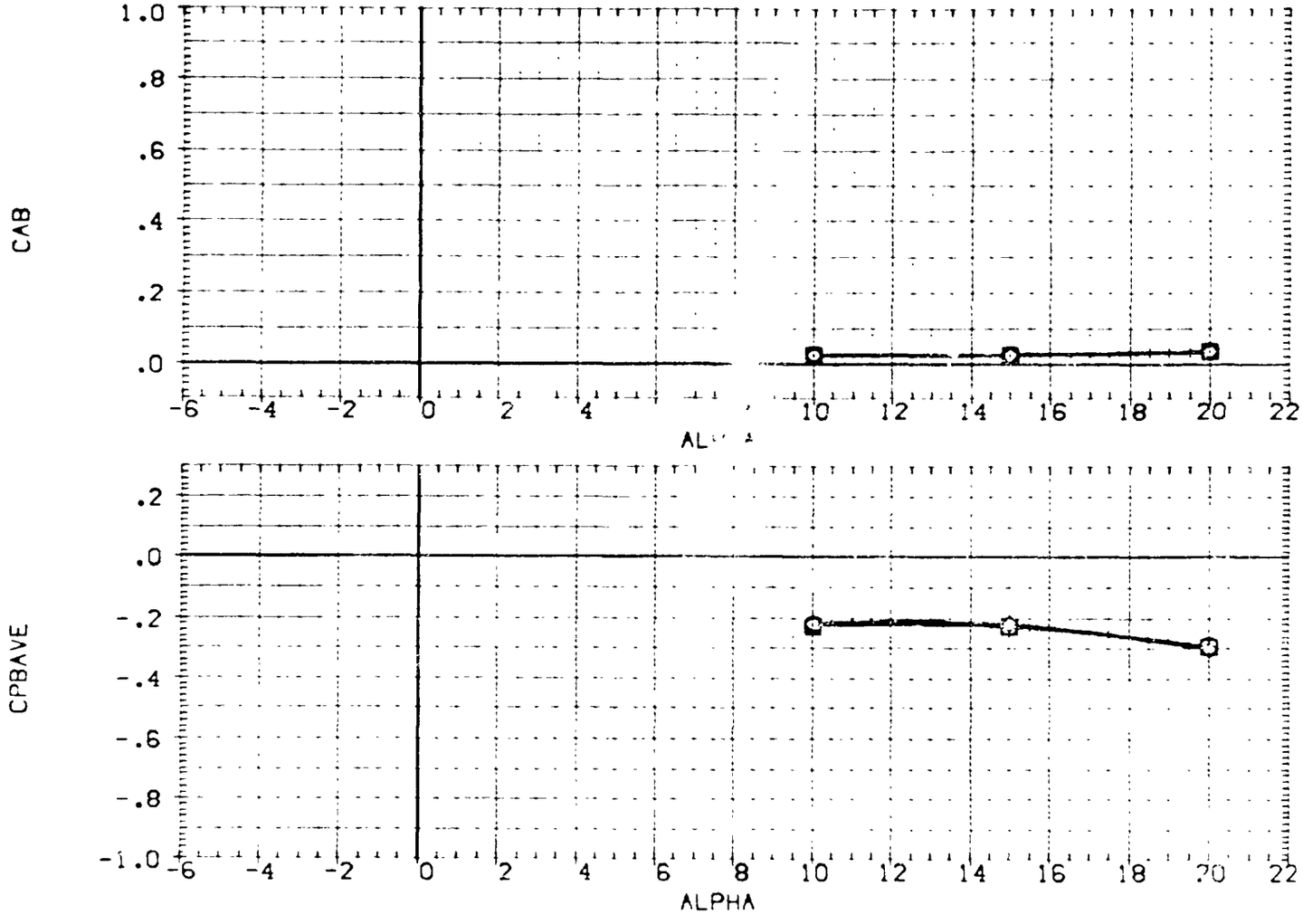

FIG. 34 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .2C

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV006)	◇	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.125	1.000	-18.000
(FDV007)	□	0A578 (NAAL 713) B16 C5 F1 J40 V87 E18	.000	.125	1.300	-18.000
(FDV008)	○	0A578 (NAAL 713) 316 C5 F1 J40 V87 E18	.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9360	IN.
XMRP	43.5580	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

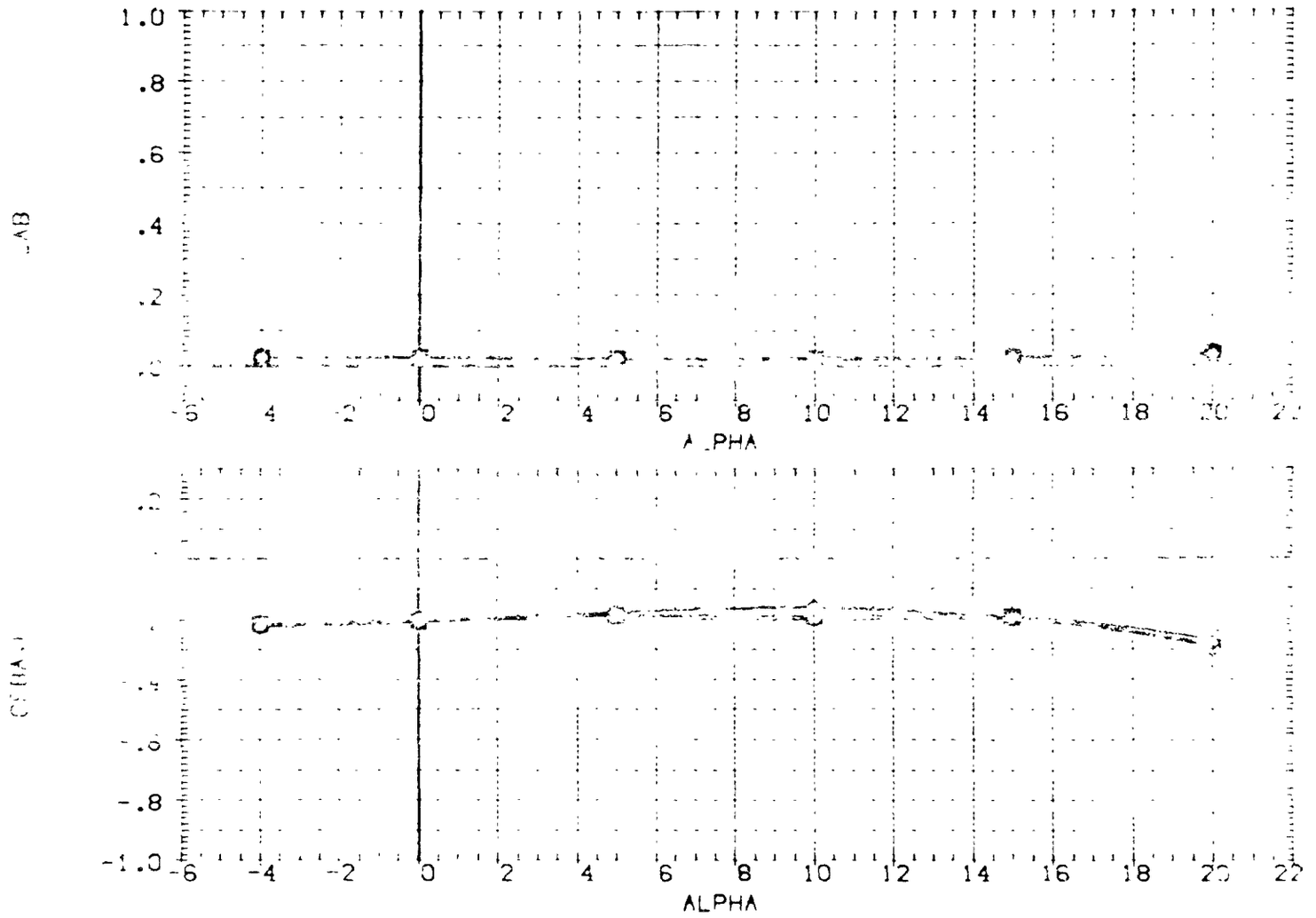

FIG. 34 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

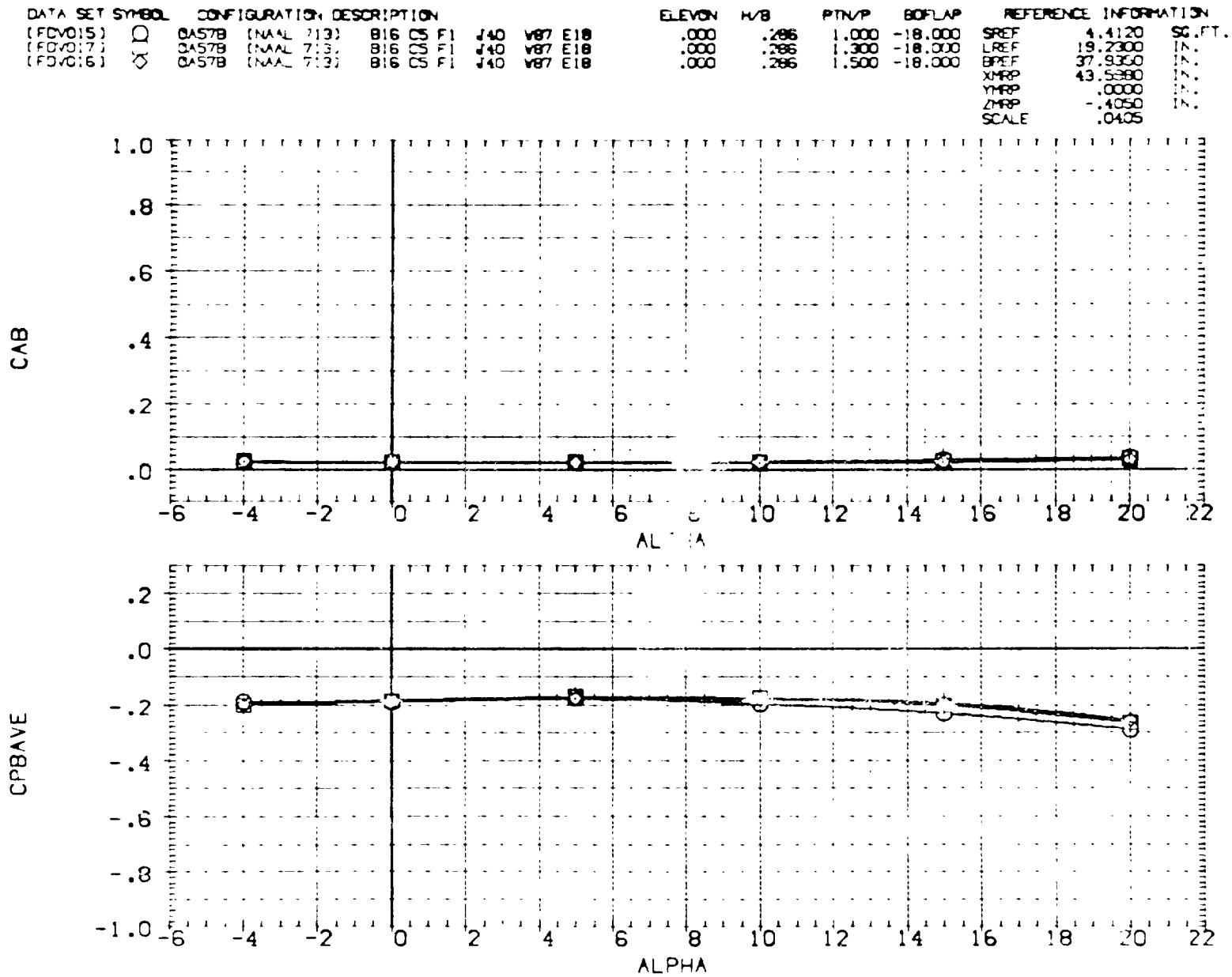

FIG. 34 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND -18 BOFLAP

(A)MAC = 2.

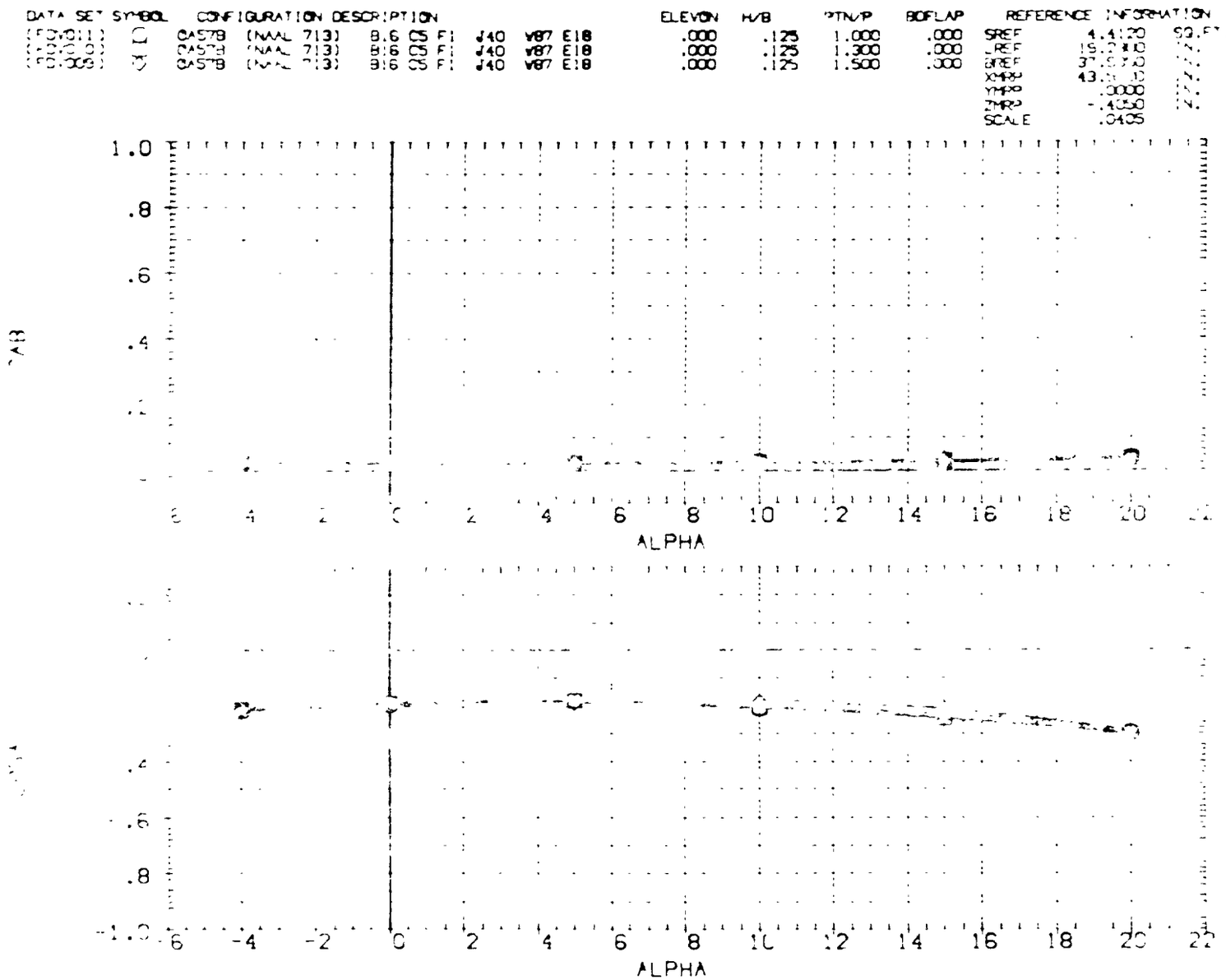

FIG. 35 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND 0 BDFLAP

(A)MACH = .6

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION							ELEVON	H/B	PTN/P	BDFLAP
(FDV013)	□	0457B	(NAA 713)	B16	C5	F1	J40	V87	E18	.000	.286	1.000	.000
(FDV014)	◇	0457B	(NAA 713)	B16	C5	F1	J40	V87	E18	.000	.286	1.300	.000
(FDV012)	○	0457B	(NAA 713)	B16	C5	F1	J40	V87	E18	.000	.286	1.500	.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5000	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

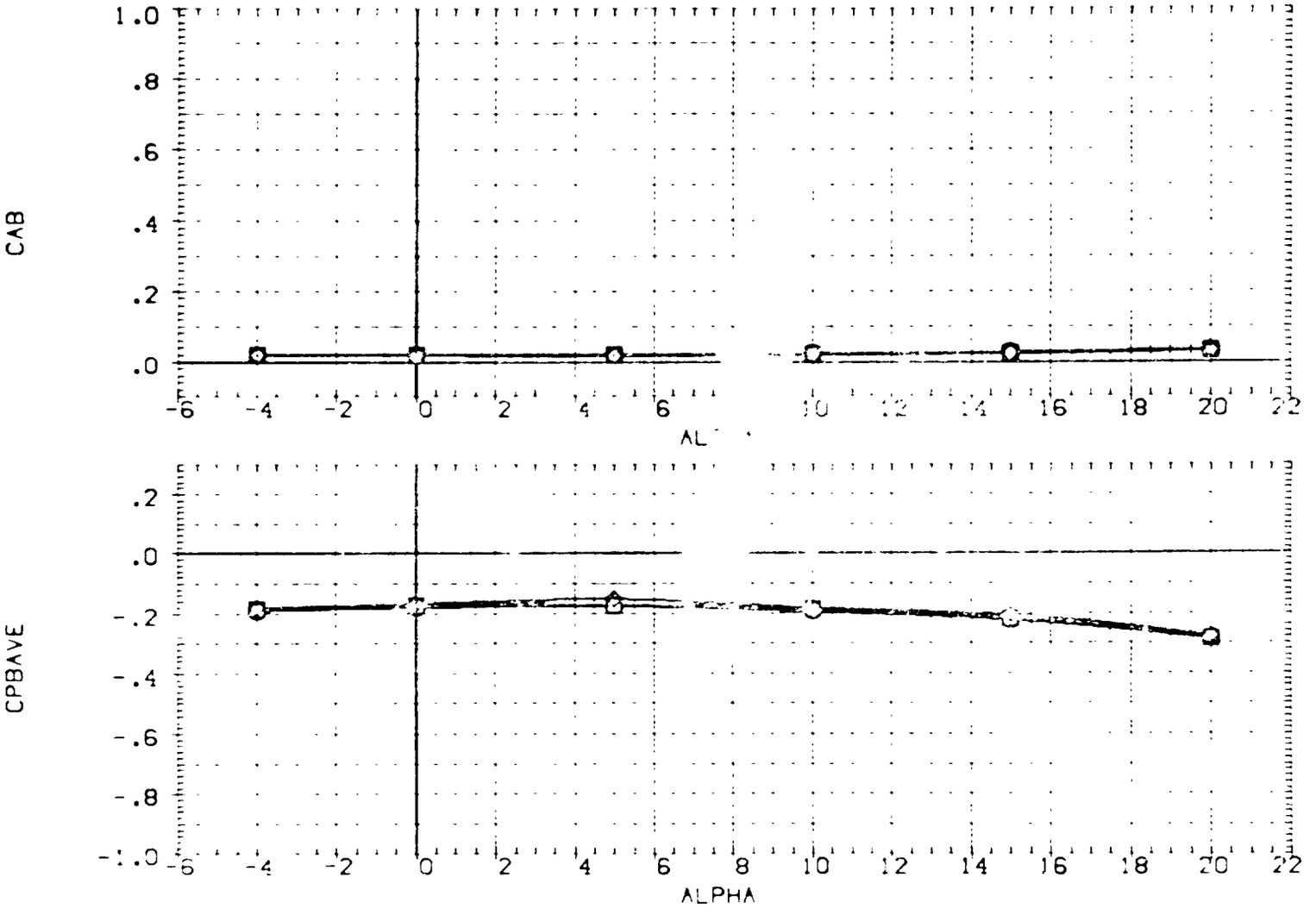

FIG. 35 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND BDFLAP

(A)MACH = .20

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DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BOFLAP	REFERENCE INFORMATION	
[illegible]	[illegible]	BASIC	(MAL 713)	B16	OS F1	.440	V87 E18	.000	.125	1.000	20.000	SREF	4.4 [illegible]
[illegible]	[illegible]	BASIC	(MAL 713)	B16	OS F1	.440	V87 E18	.000	.125	1.300	20.000	CREF	19.[illegible]
[illegible]	[illegible]	BASIC	(MAL 713)	B16	OS F1	.440	V87 E18	.000	.125	1.500	20.000	BREF	[illegible]
												XMRP	42.5 [illegible]
												ZMRP	[illegible]
												ZMRP	[illegible]
												SCALE	.0405

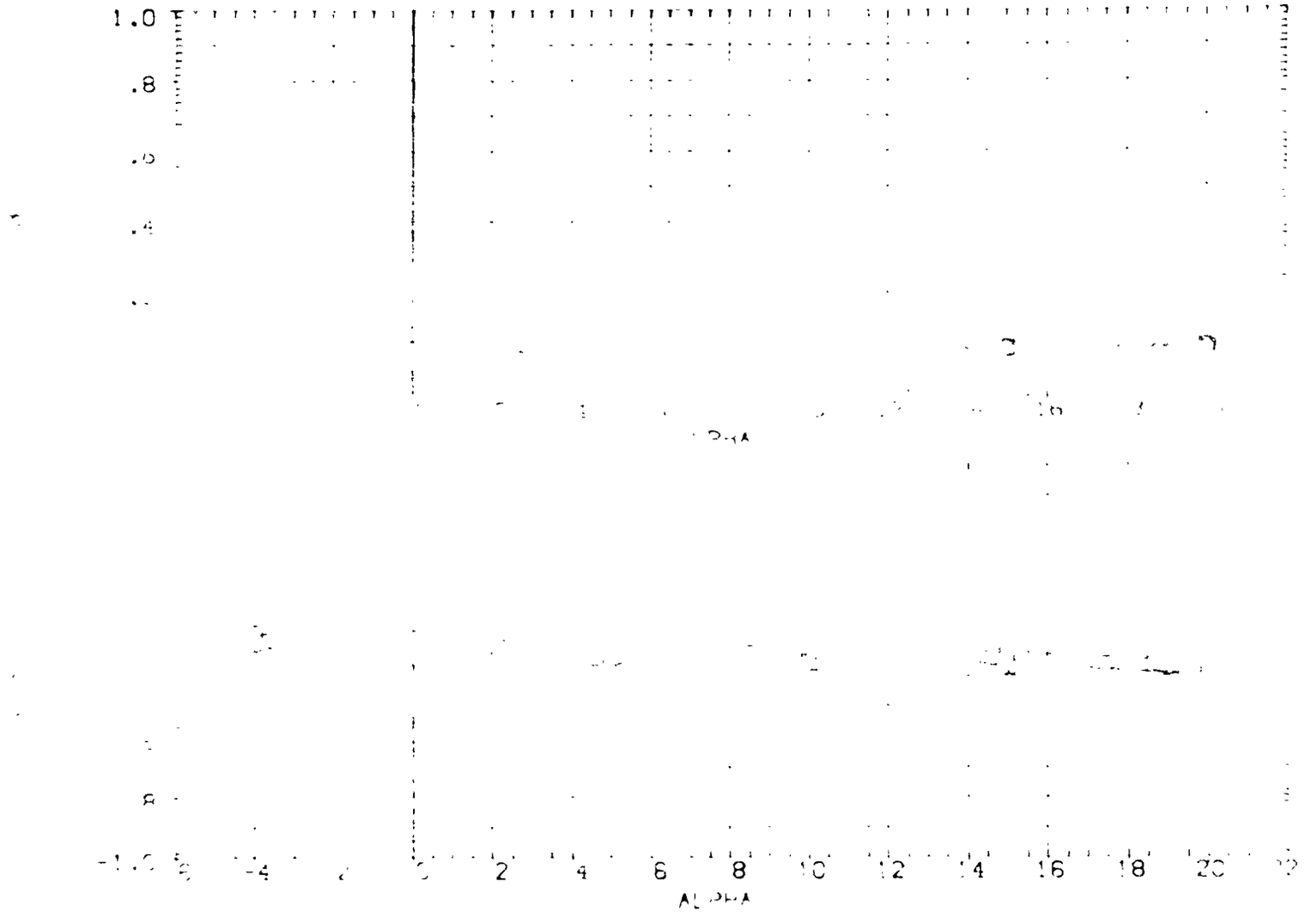


FIG. 36 BASIC PITCH [illegible] AND AXIAL FORCE WITH .440 , 0 ELEVON AND 20 BOFLAP

(A)MAL [illegible]

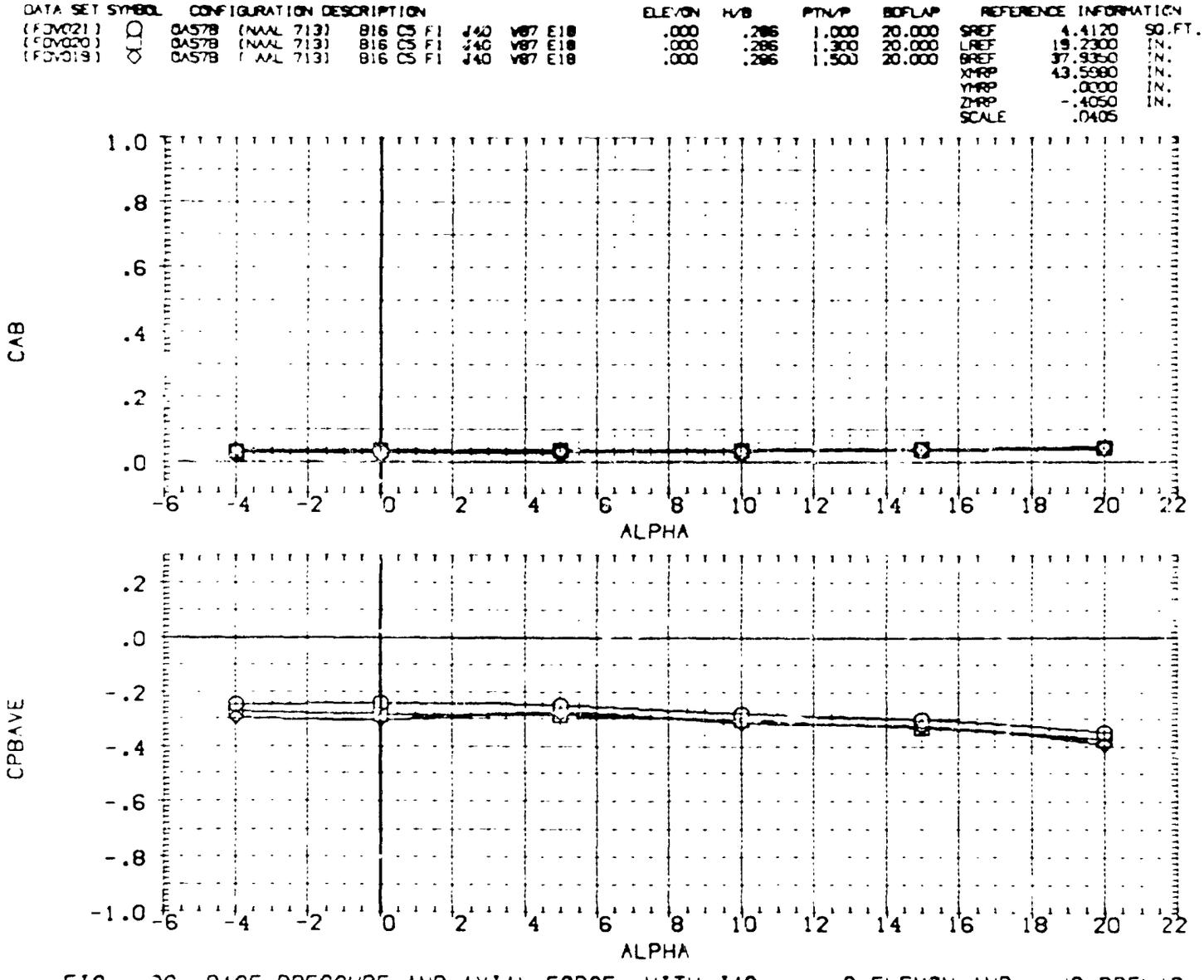


FIG. 36 BASE PRESSURE AND AXIAL FORCE WITH J40 , 0 ELEVON AND 20 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(HOV033)	○	0A578	(NAAL 713)	B16 CS F1	J40	V87	E18	15.000	.039	1.000	-18.000
(HOV032)	□	0A578	(NAAL 713)	B16 CS F1	J40	V87	E18	15.000	.038	1.300	-18.000
(HOV031)	◇	0A578	(NAAL 713)	B16 CS F1	J40	V87	E18	15.000	.039	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5930	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

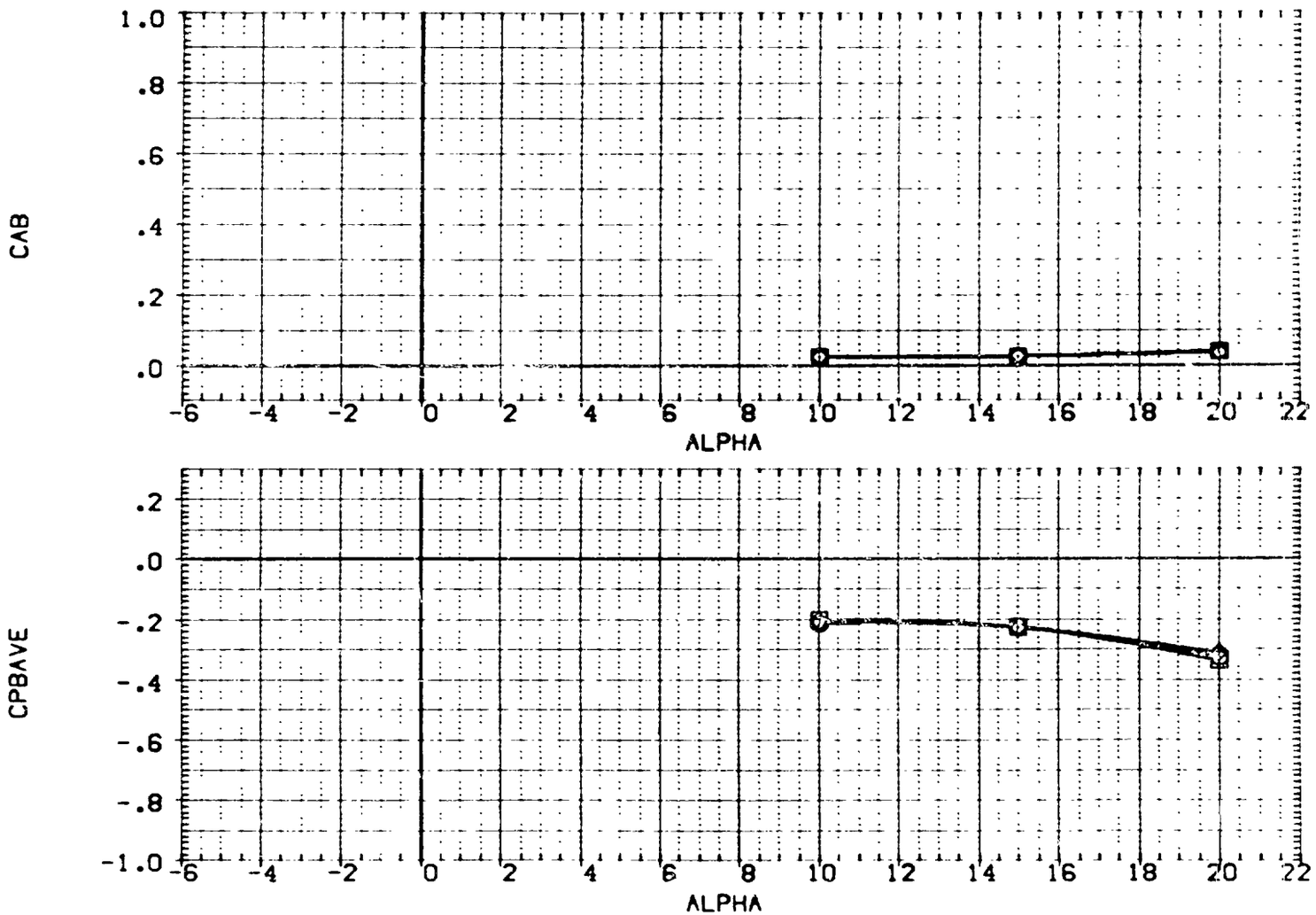


FIG. 37 BASE PRESSURE AND AXIAL FORCE WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV030)		0A57B (NAAL 713) B16 CS F1 J40 W87 E18	15.000	.125	1.000	-18.000
(FDV029)		0A57B (NAAL 713) B16 CS F1 J40 W87 E18	15.000	.125	1.300	-18.000
(FDV028)		0A57B (NAAL 713) B16 CS F1 J40 W87 E18	15.000	.125	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5530	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

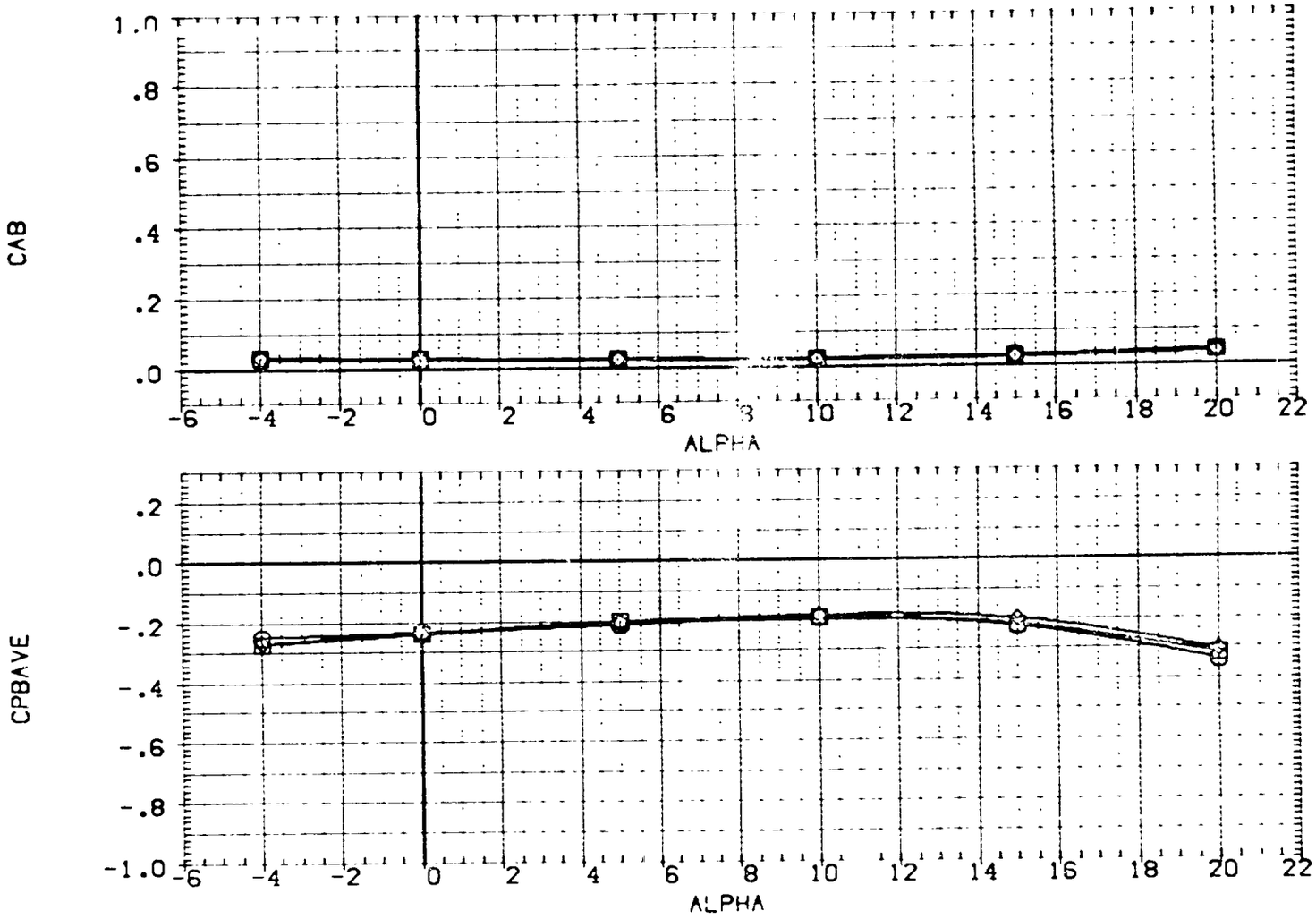


FIG. 37 BASE PRESSURE AND AXIAL FORCE WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(FDV036)	◇	0A57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	15.000	.286	1.000	-18.000
(FDV035)	□	0A57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	15.000	.286	1.300	-18.000
(FDV034)	△	0A57B	(NAAL 713)	B16 C5 F1	J40	W87 E18	15.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9300	IN.
XMRP	43.5300	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

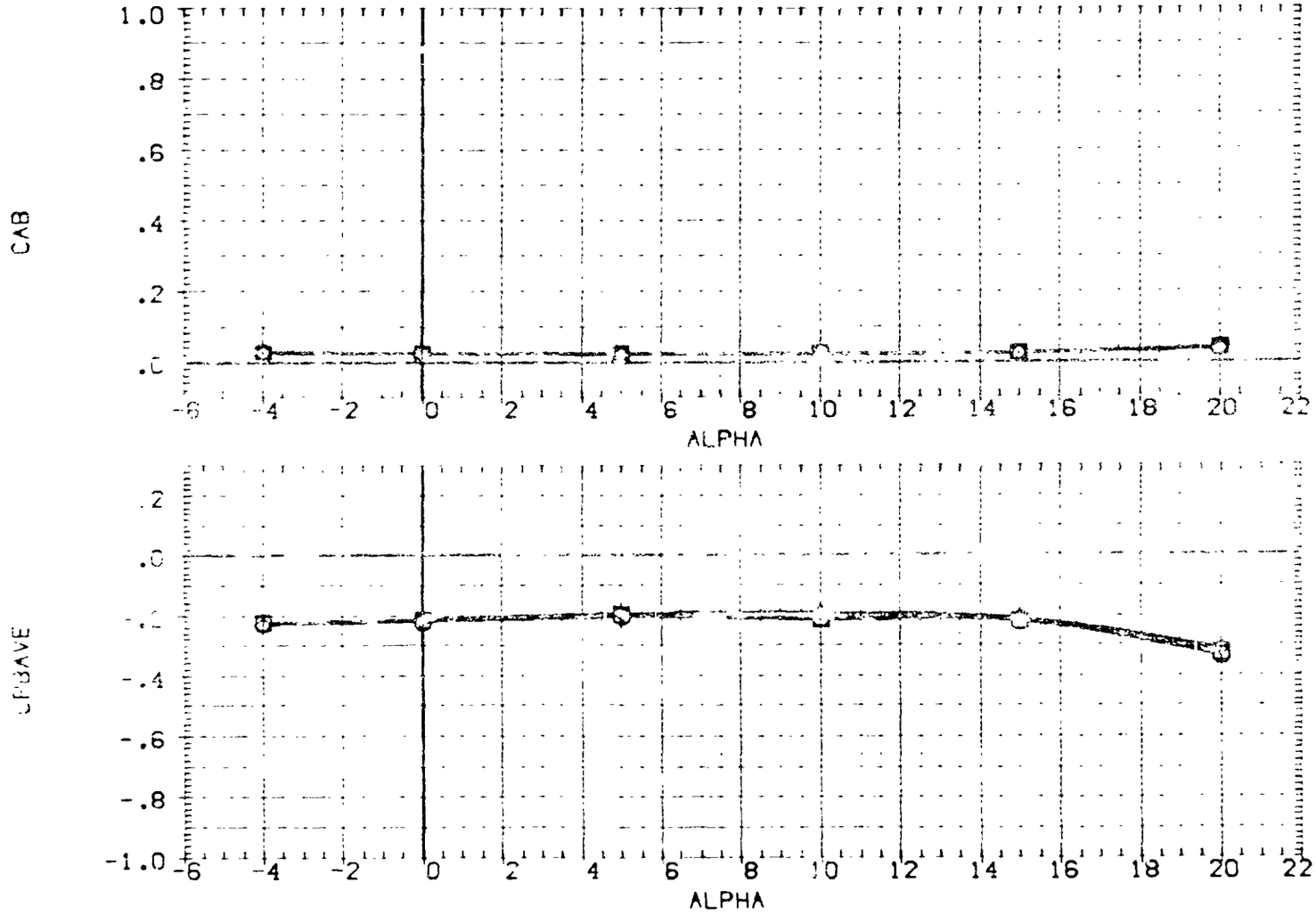


FIG. 37 BASE PRESSURE AND AXIAL FORCE WITH J40 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

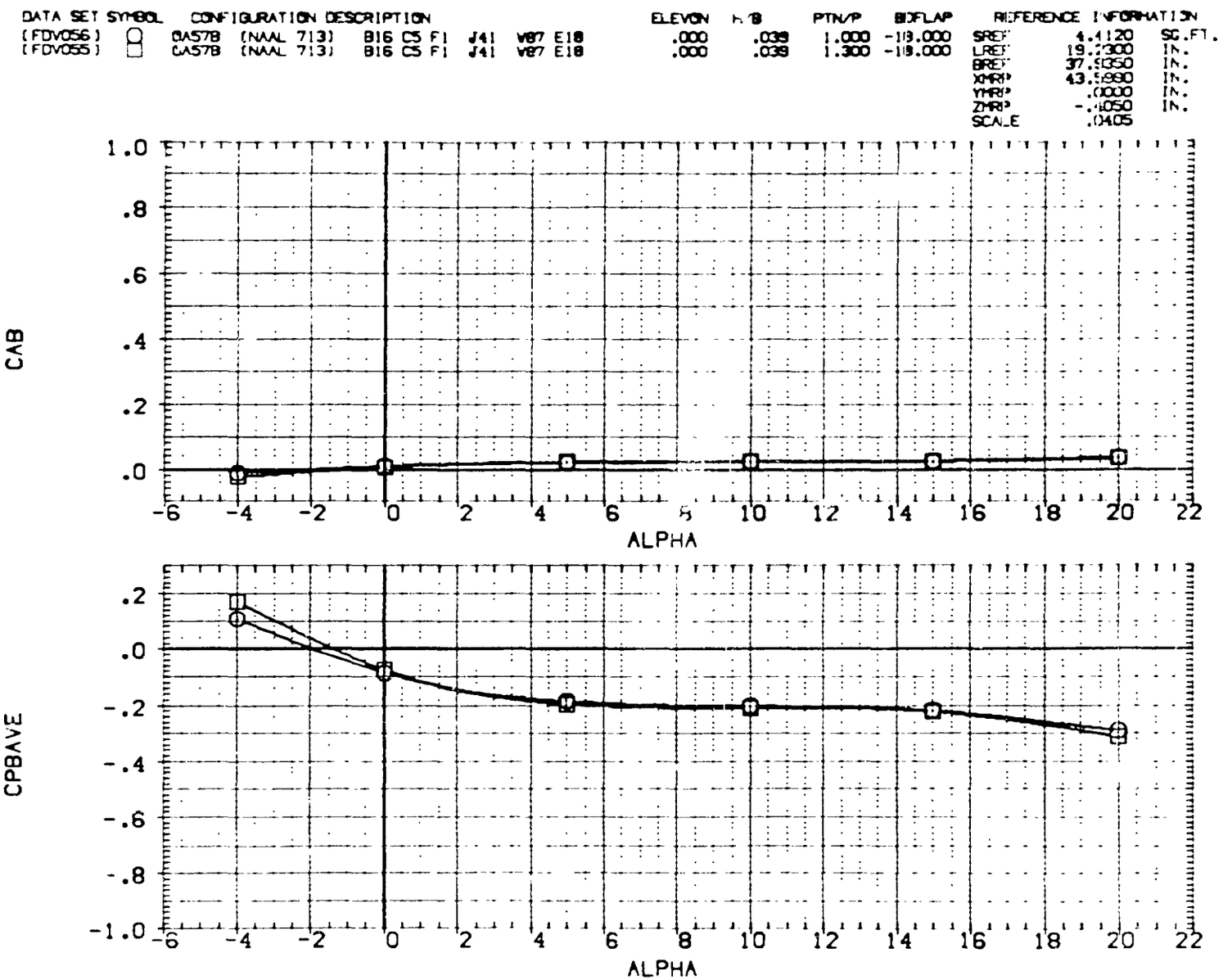


FIG. 38 BASE PRESSURE AND AXIAL FORCE WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV058)	○	0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.125	1.000	-18.000
(FDV057)	□	0A57B (NAAL 713) B16 C5 F1 J41 V87 E18	.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5080	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

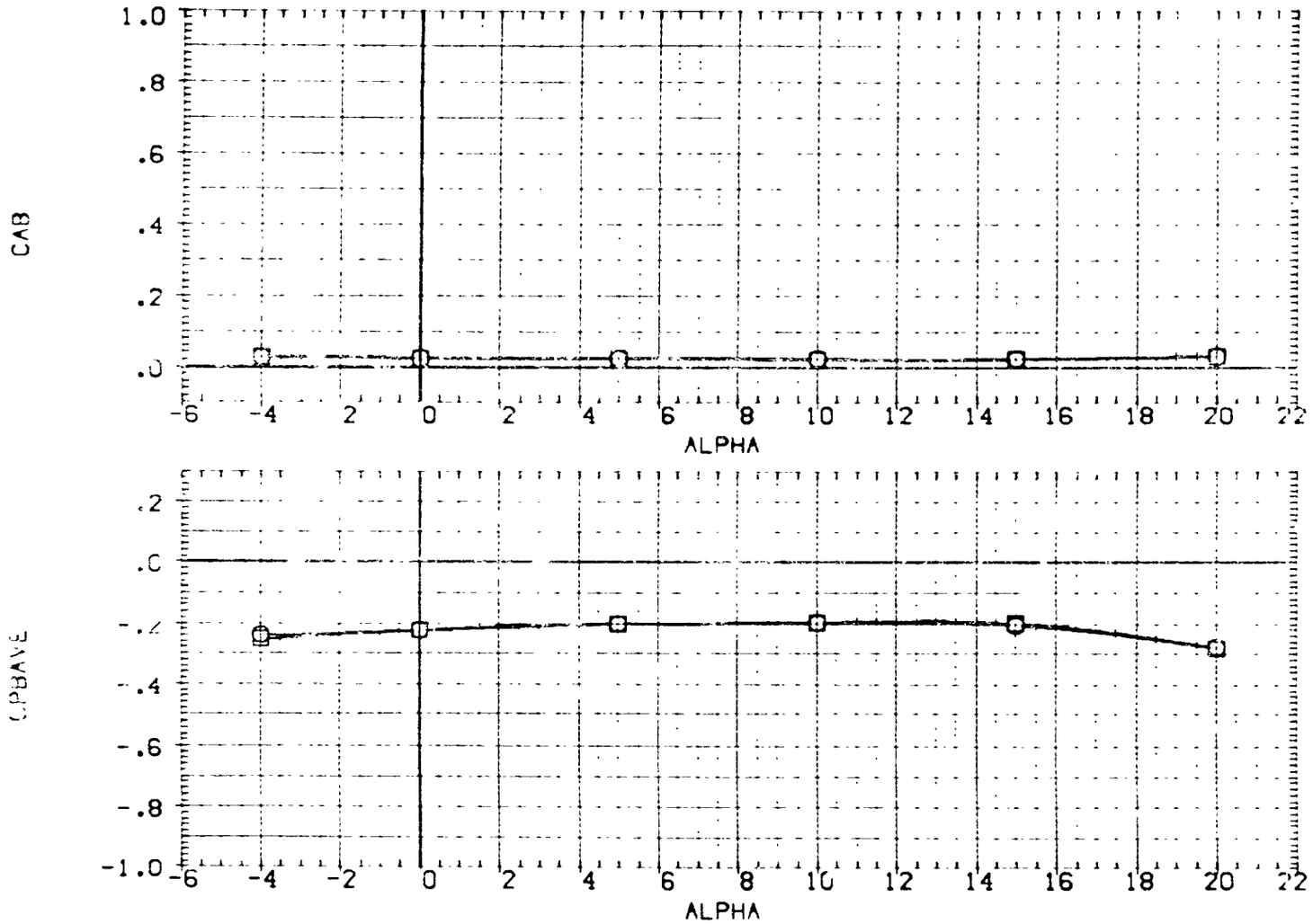


FIG. 38 BASE PRESSURE AND AXIAL FORCE WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

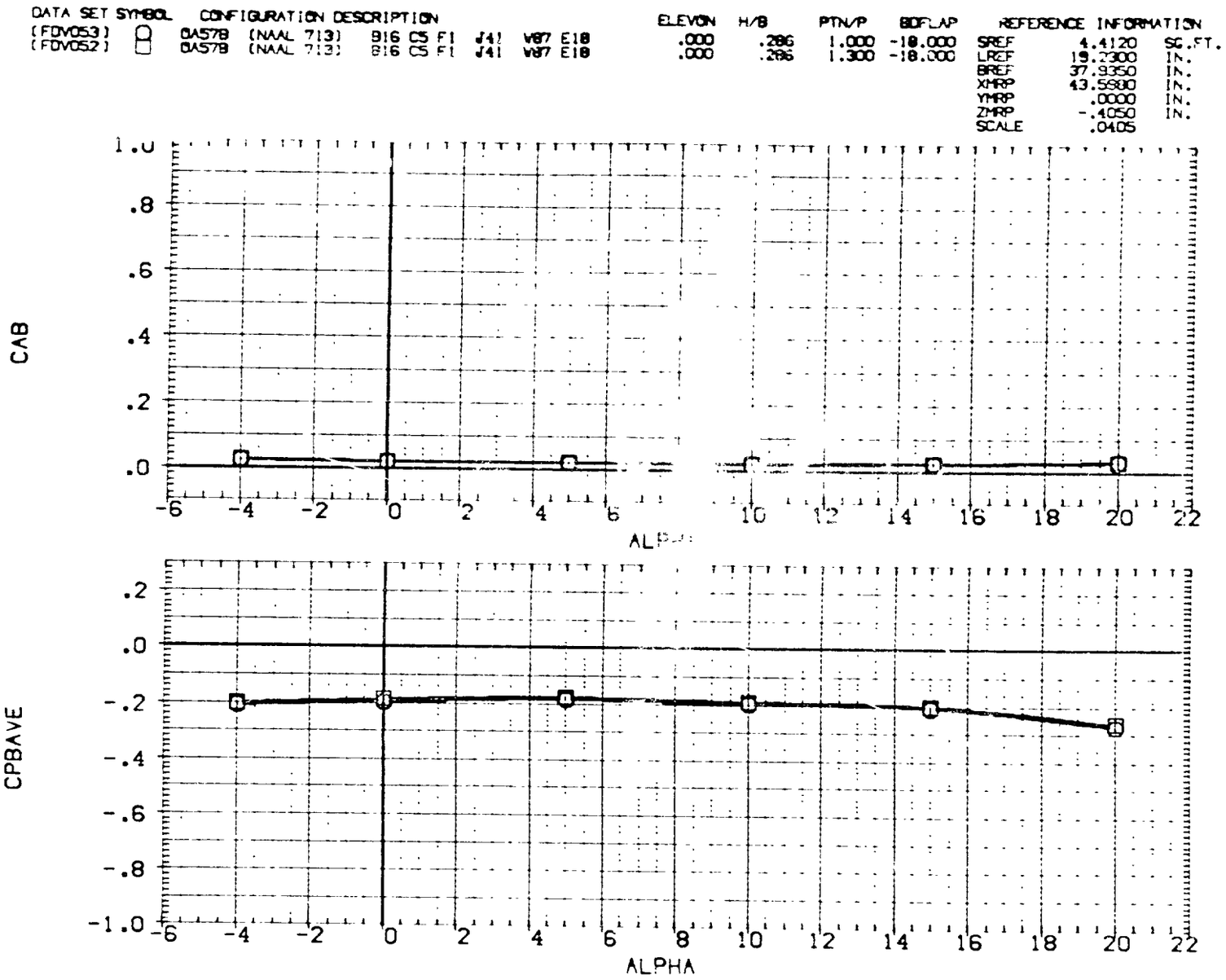


FIG. 38 BASE PRESSURE AND AXIAL FORCE WITH J41 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

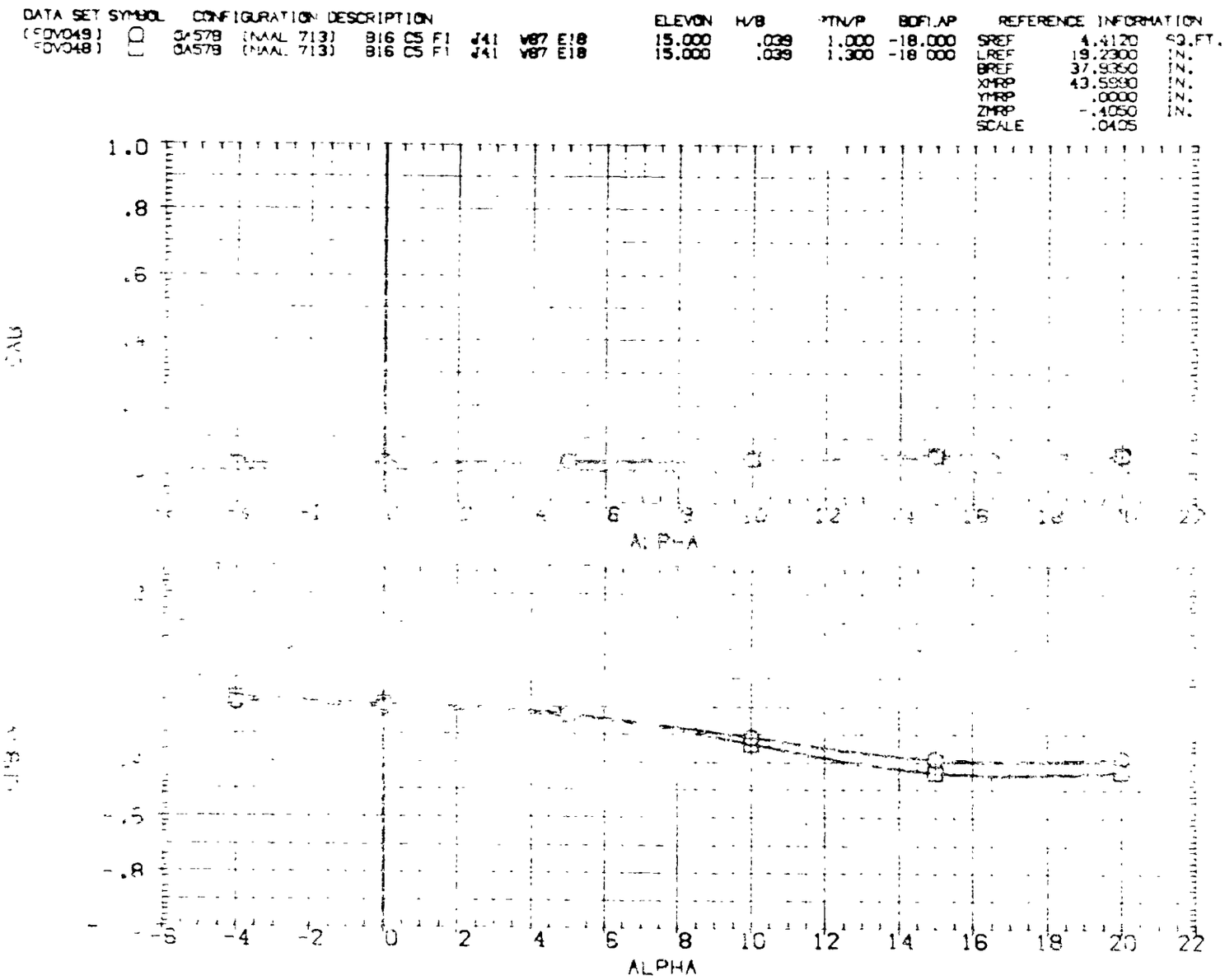


FIG. 39 BASE PRESSURE AND AXIAL FORCE WITH J41 , 15 ELEVON AND -18 BDF_AP

(A)MACH = .[illegible]

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	H/B	PTN/P	BDFLAP
(FDV047) ○	0A578 (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.000	-18.000
(FDV046) □	0A578 (NAAL 713) B16 C5 F1 J41 V87 E18	15.000	.125	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5900	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

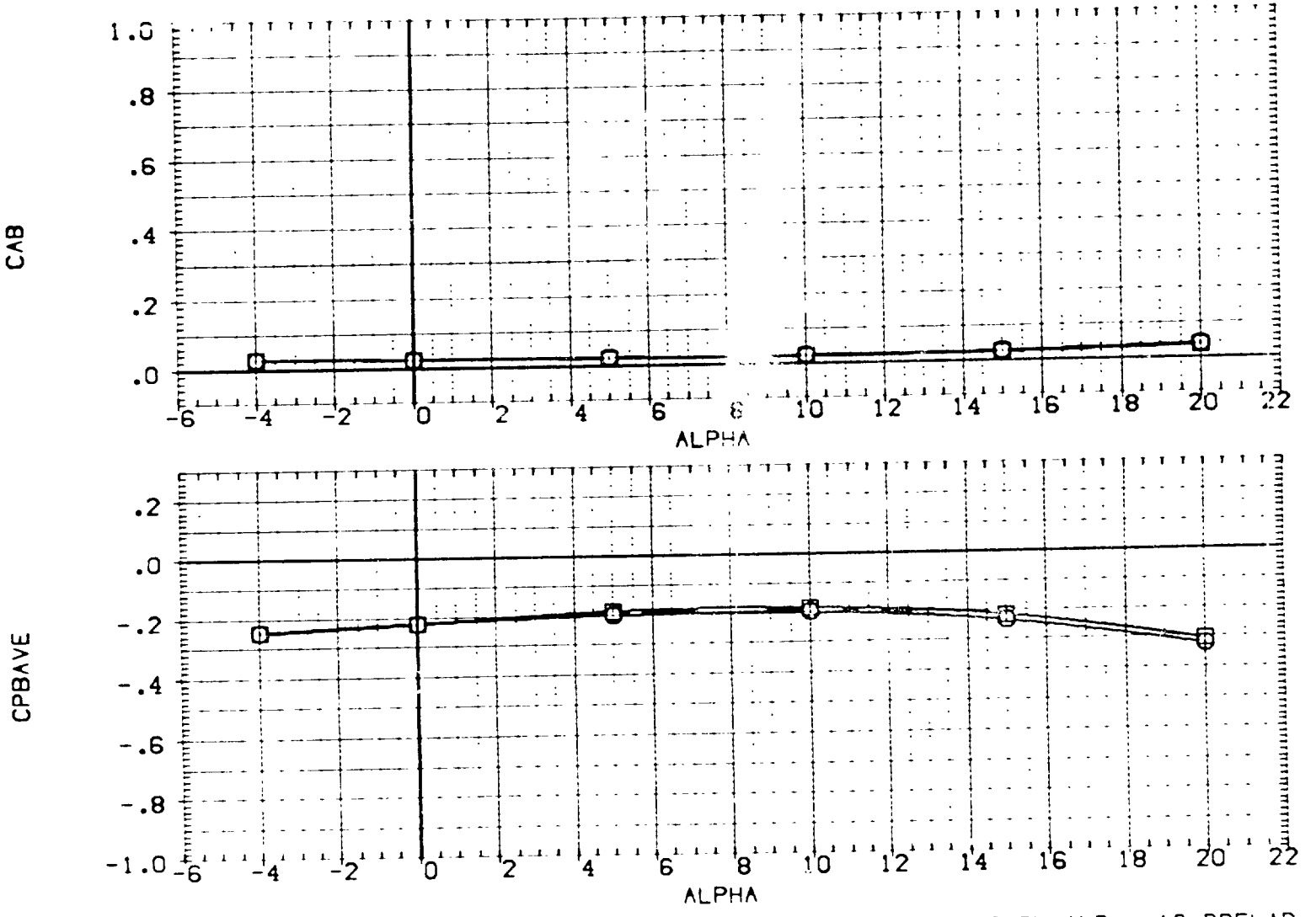


FIG. 39 BASE PRESSURE AND AXIAL FORCE WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION					ELEVON	H/B	PTN/P	BDFLAP
(FOV05I)	□	0A578 (NAAL 713)	B16 C5 F1	J41	W87 E18		15.000	.286	1.000	-18.000
(FOV05O)	□	0A578 (NAAL 713)	B16 C5 F1	J41	W87 E18		15.000	.286	1.300	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5980	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

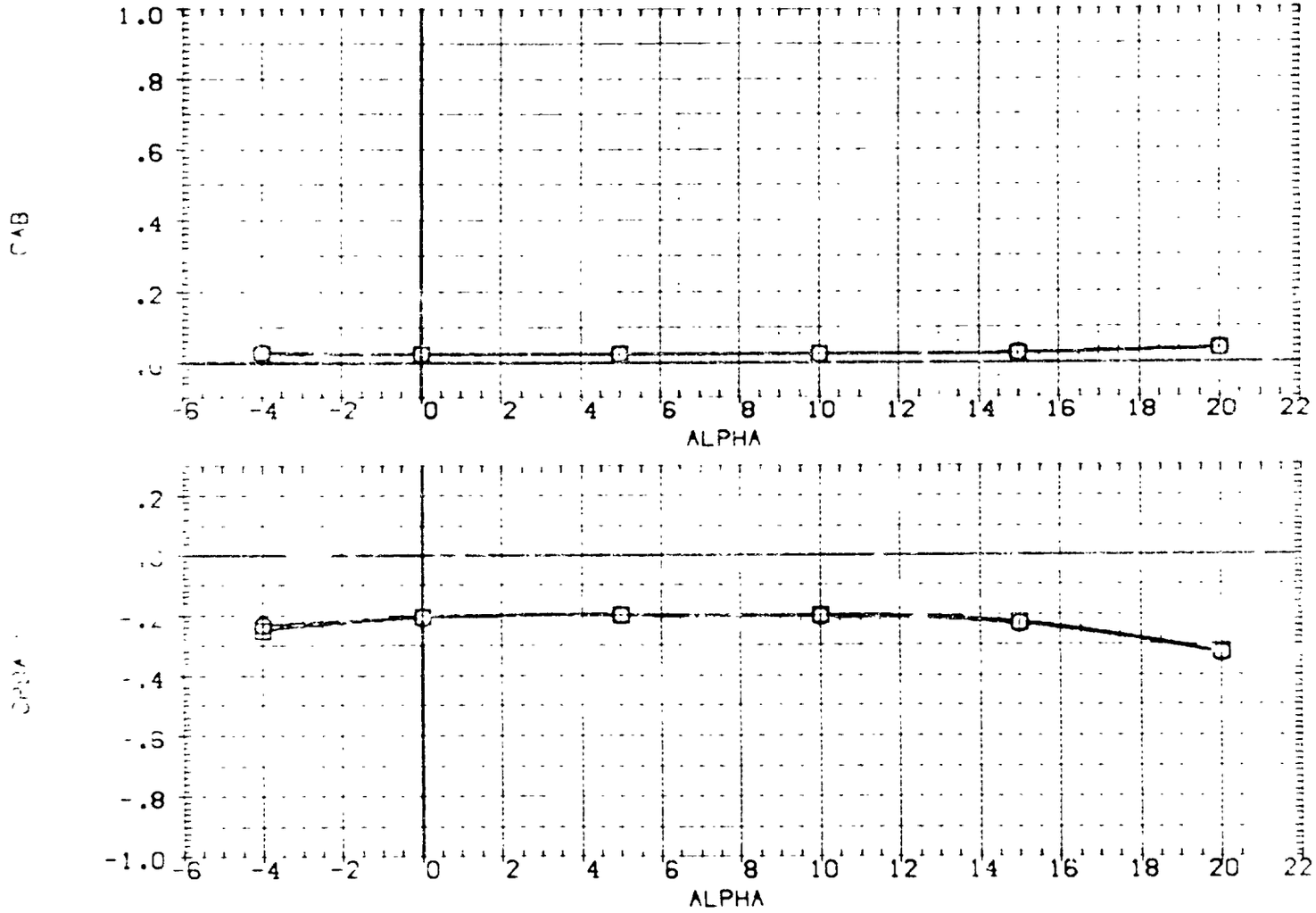


FIG. 39 BASE PRESSURE AND AXIAL FORCE WITH J41 , 15 ELEVON AND -18 BDFLAP

(A)MAC = .20

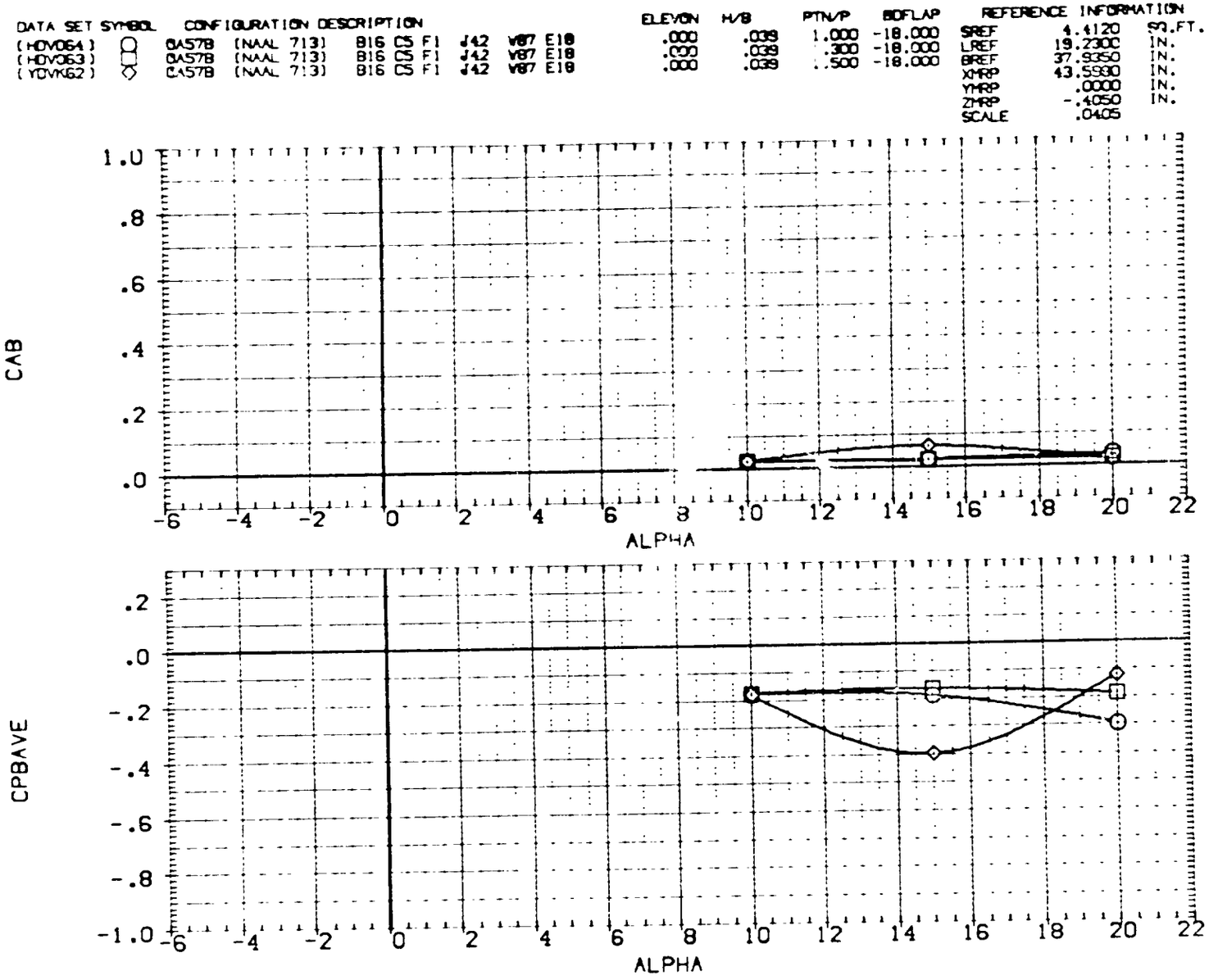


FIG. 40 BASE PRESSURE AND AXIAL FORCE WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

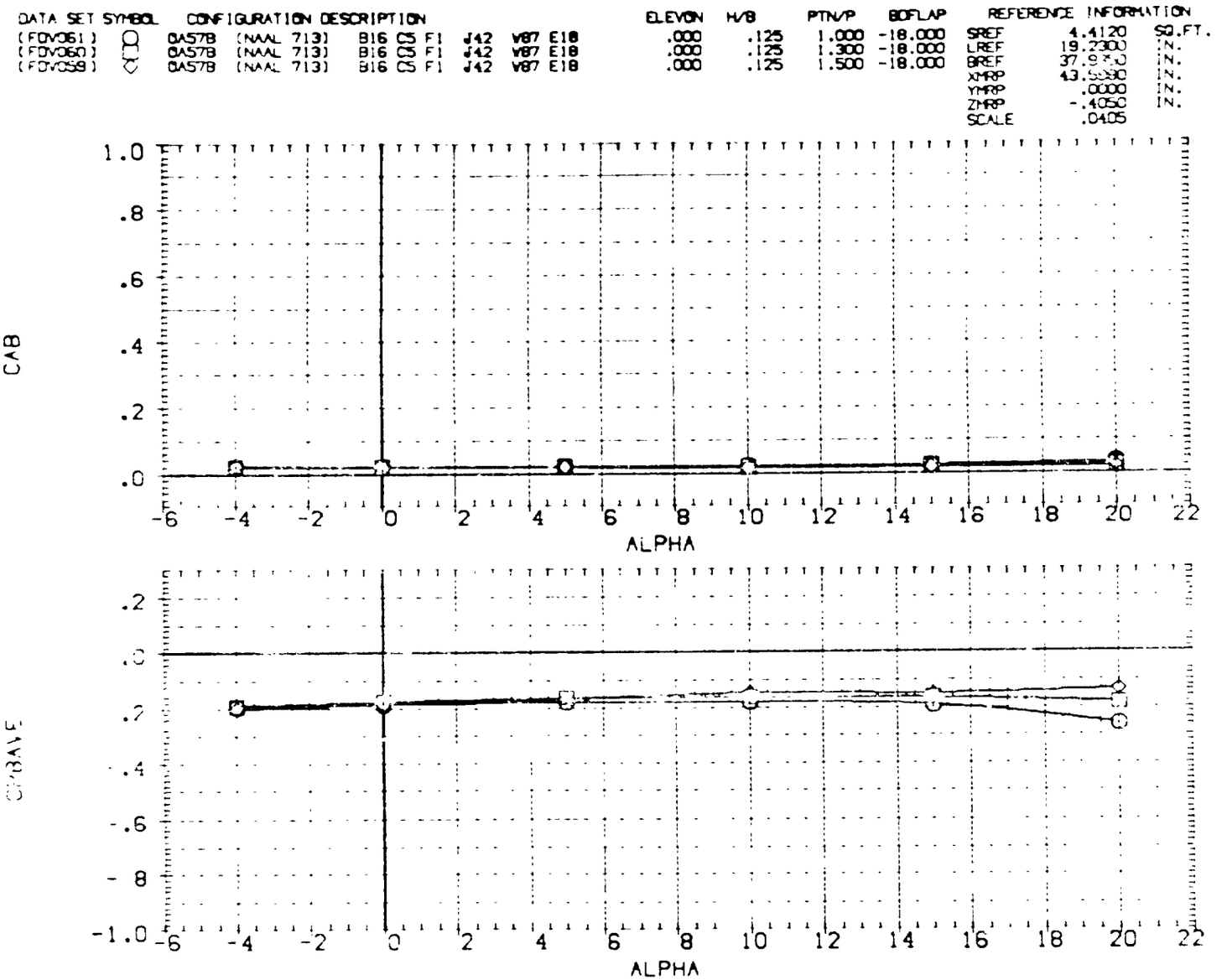


FIG. 40 BASE PRESSURE AND AXIAL FORCE WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION						ELEVON	H/B	PTN/P	BDFLAP
(FDV070)	□	0A578	(NAL 713)	B16 C5 F1	J42	W87 E18		.000	.286	1.000	-18.000
(FDV069)	□	0A578	(AAL 713)	B16 C5 F1	J42	W87 E18		.000	.286	1.300	-18.000
(FDV068)	◇	0A578	(NAAL 713)	B16 C5 F1	J42	W87 E18		.000	.286	1.500	-18.000

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5930	IN.
YMRP	.0070	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

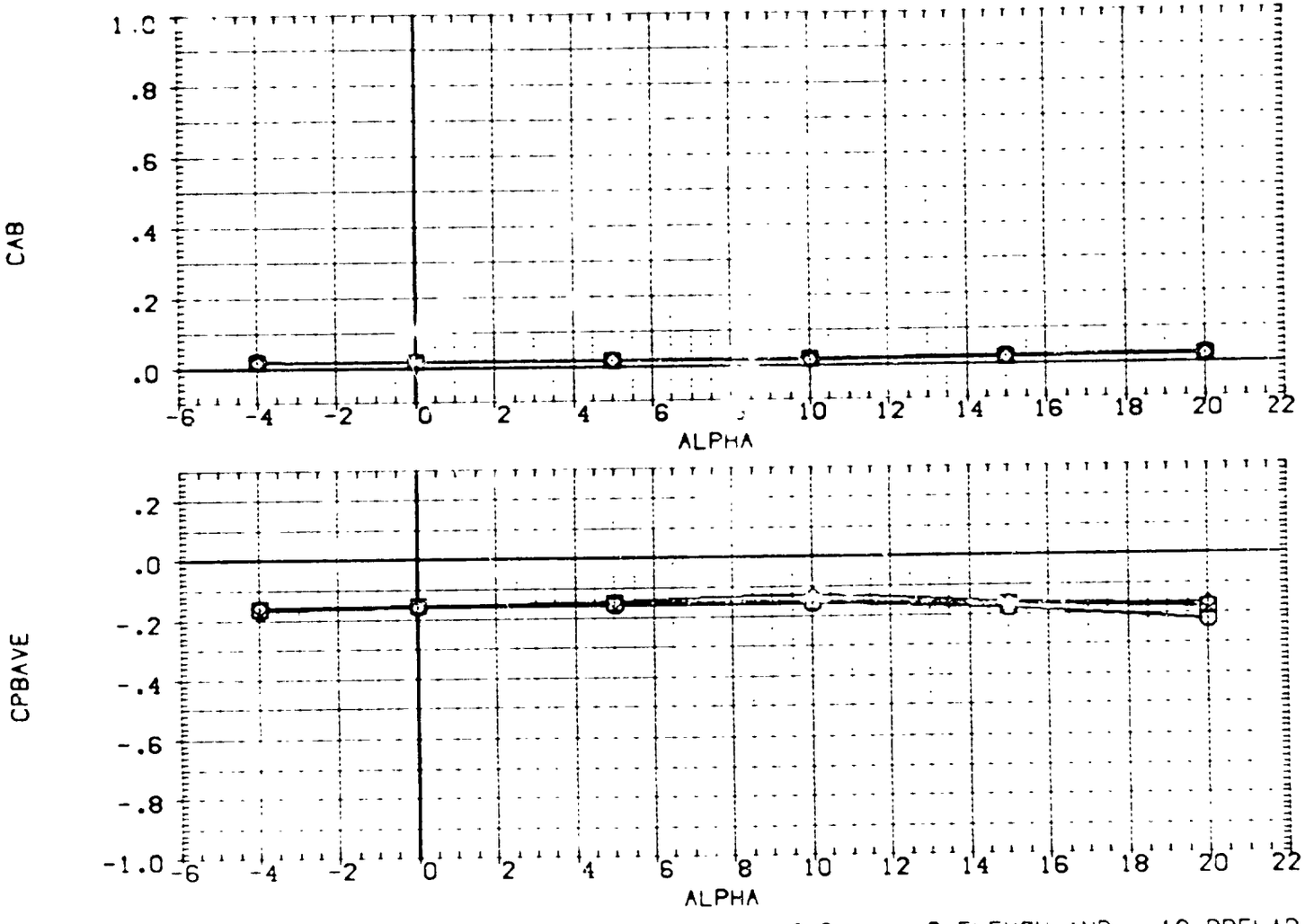


FIG. 40 BASE PRESSURE AND AXIAL FORCE WITH J42 , 0 ELEVON AND -18 BDFLAP

(A)MACH = .20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION				ELEVON	H/B	PTN/P	BOFLAP
(FDV072)	○	0A578 (NAAL 713)	B:2 CS	J42	V87 F18	.000	.286	1.000	
(FDV071)	□	0A578 (NAAL 713)	B:2 CS	J42	V87 F18	.000	.286	1.300	

REFERENCE INFORMATION		
SREF	4.4120	SQ.FT.
LREF	19.2300	IN.
BREF	37.9350	IN.
XMRP	43.5680	IN.
YMRP	.0000	IN.
ZMRP	-.4050	IN.
SCALE	.0405	

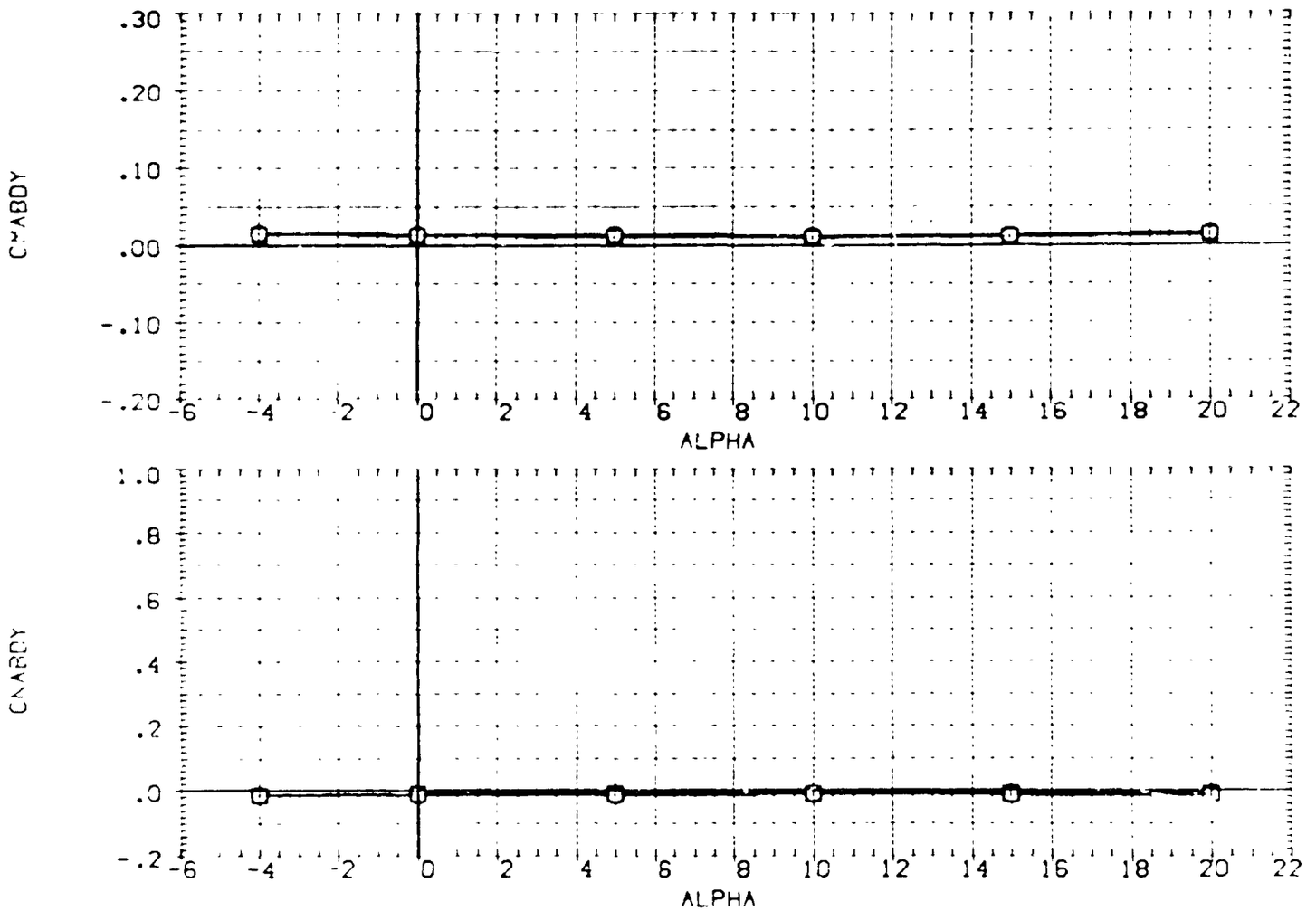


FIG. 41 INTEGRATED AFTERBODY FORCE COEFFICIENTS

(A)MACH = .20

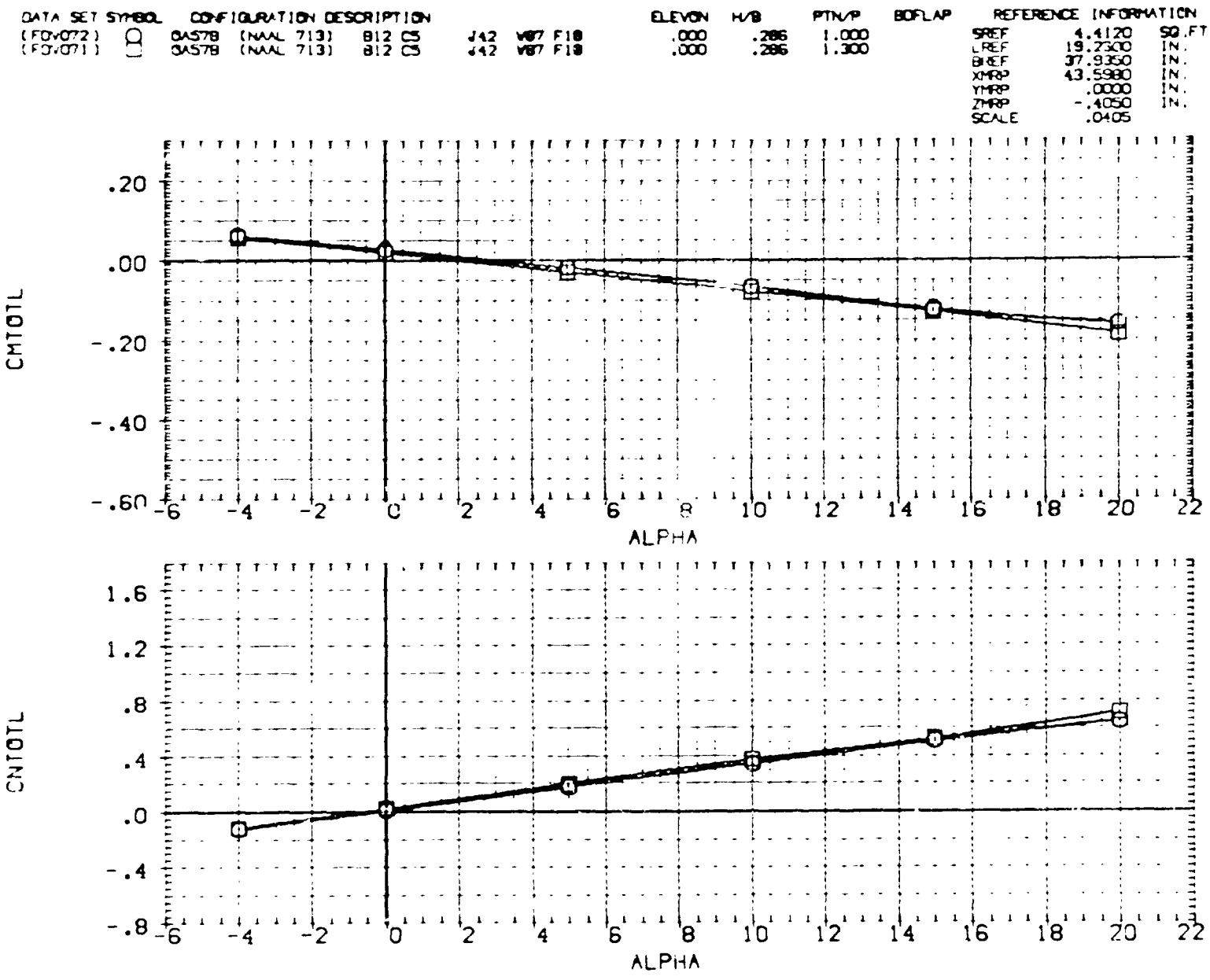


FIG. 41 INTEGRATED AFTERBODY FORCE COEFFICIENTS

(A) MACH = .20

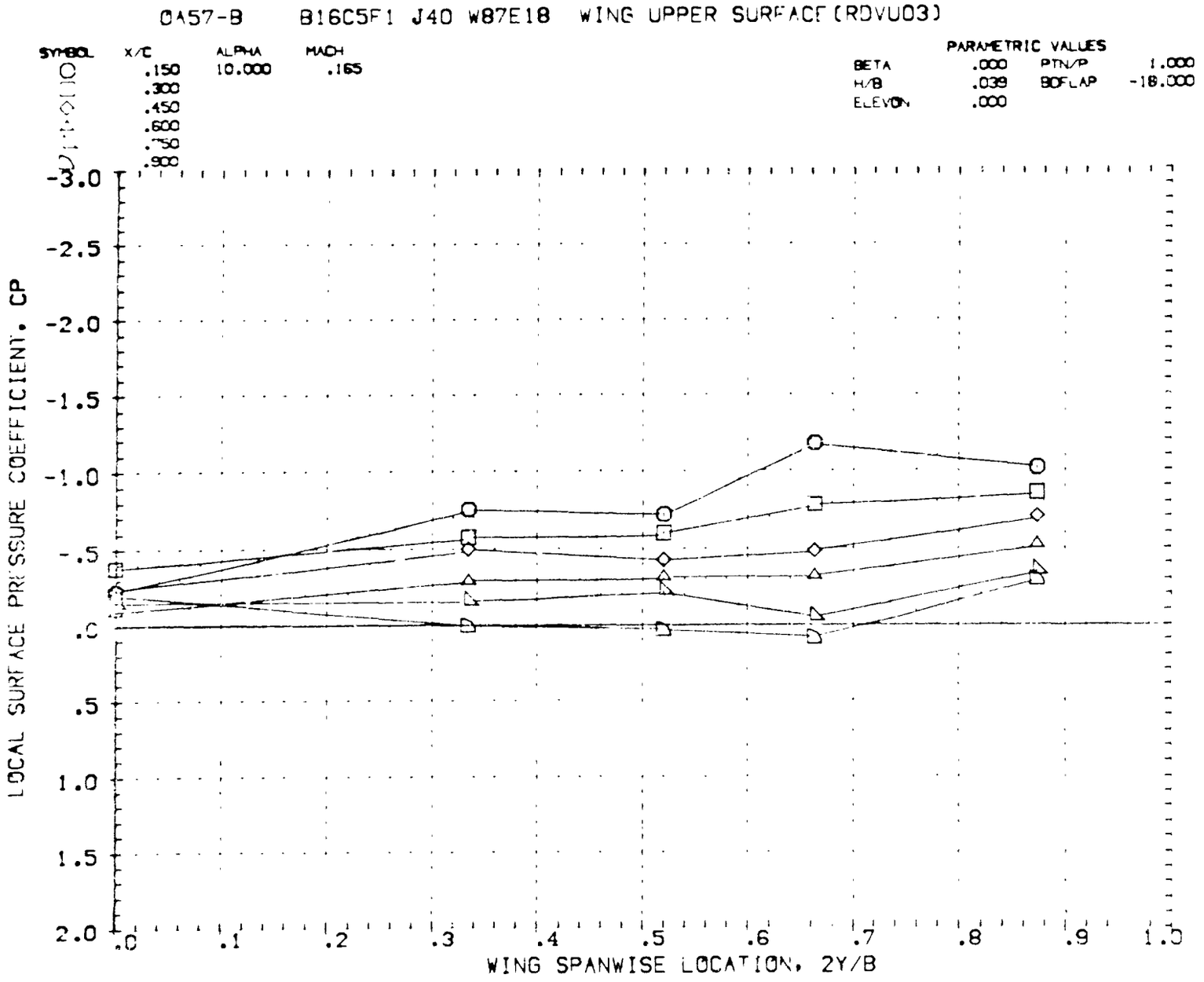


FIG 42 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

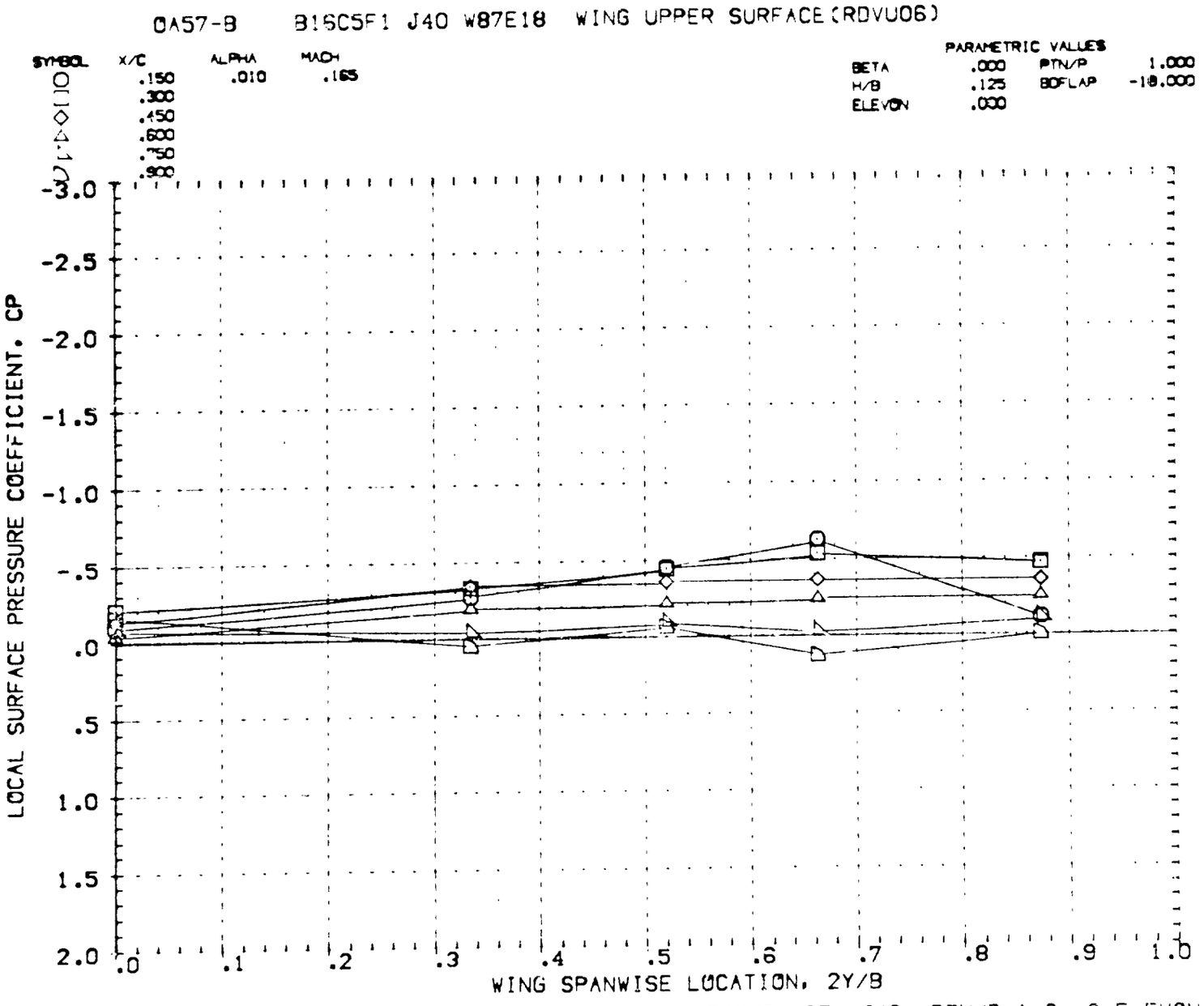


FIG 42 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

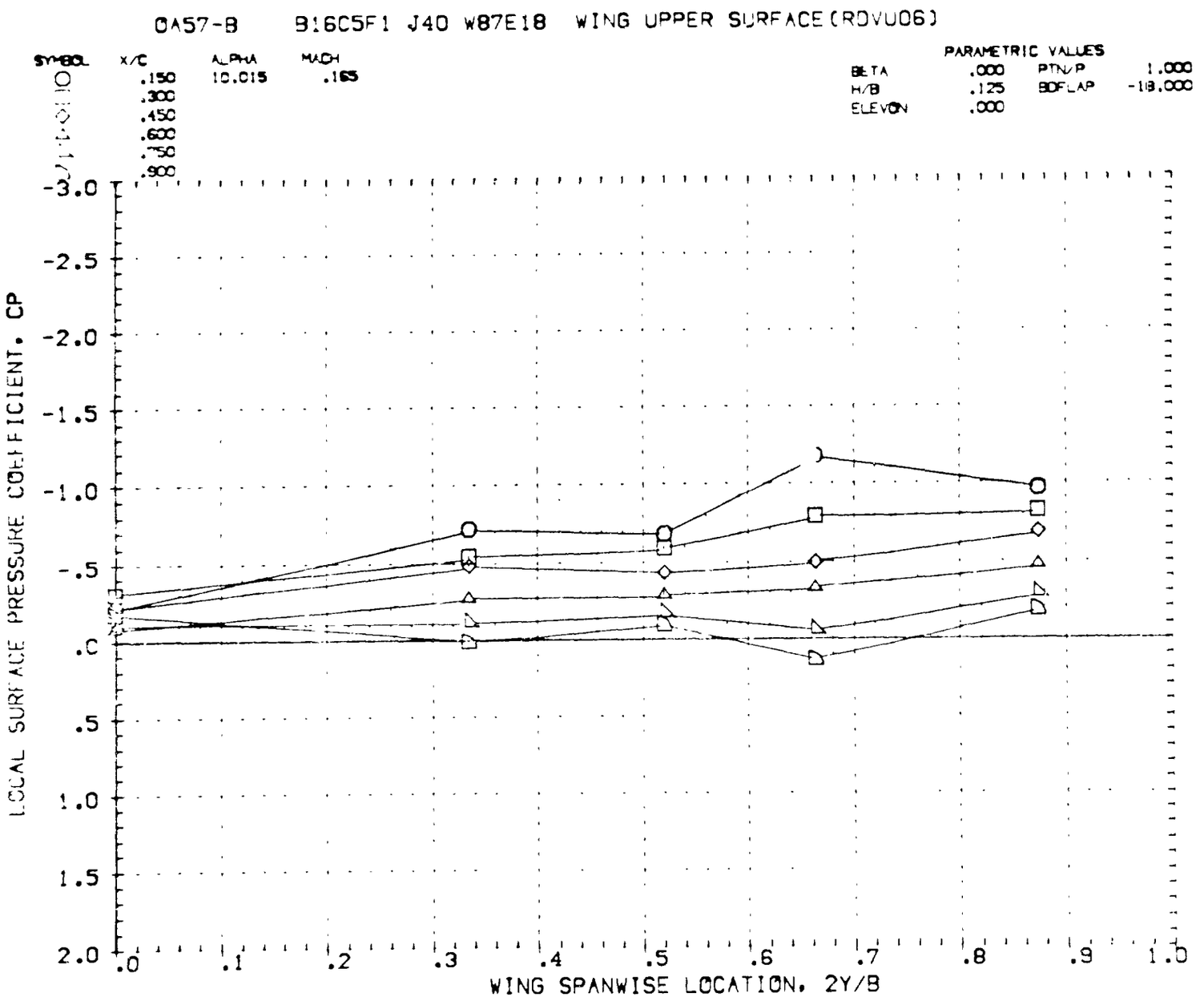


FIG 42 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

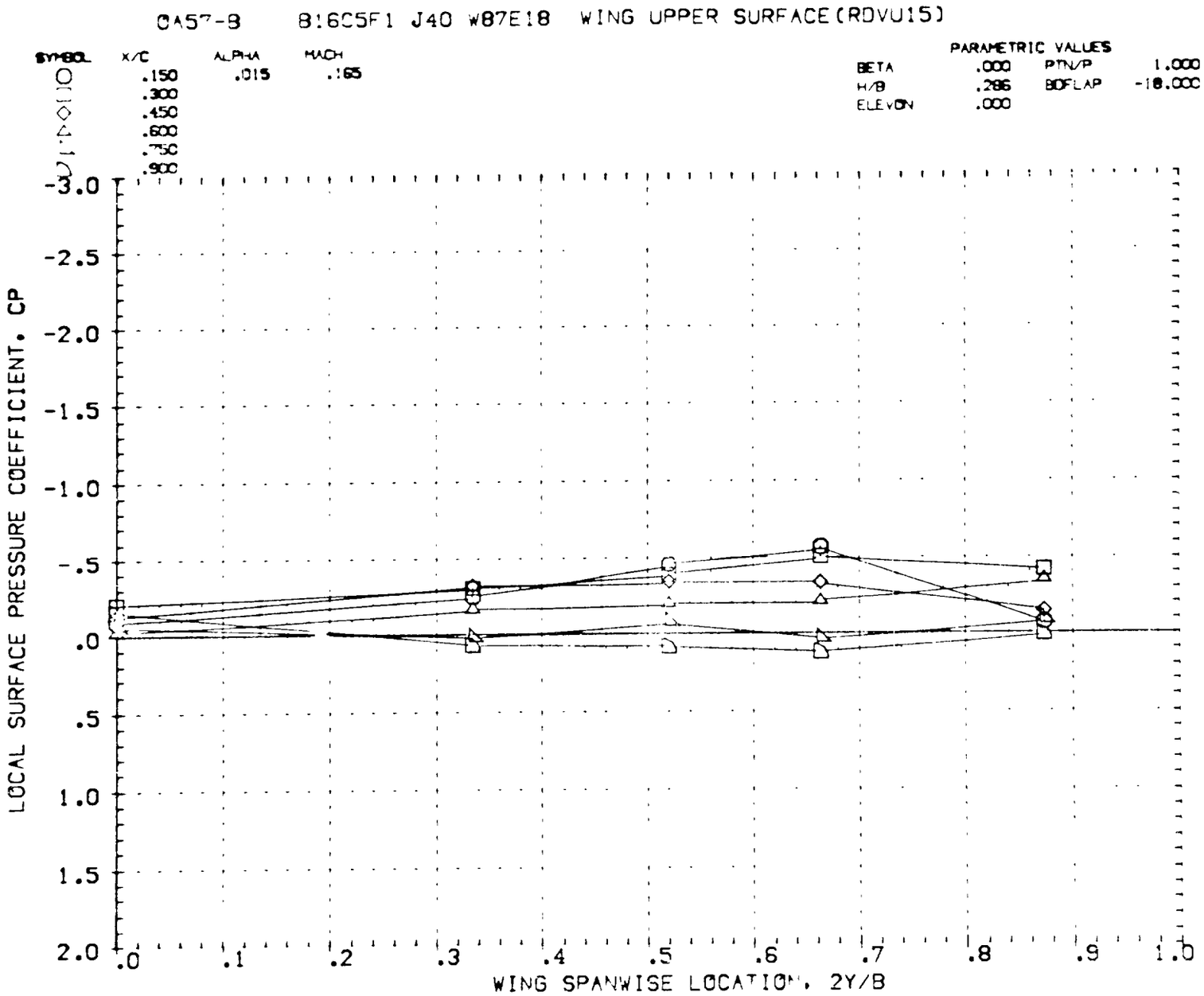


FIG 42 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

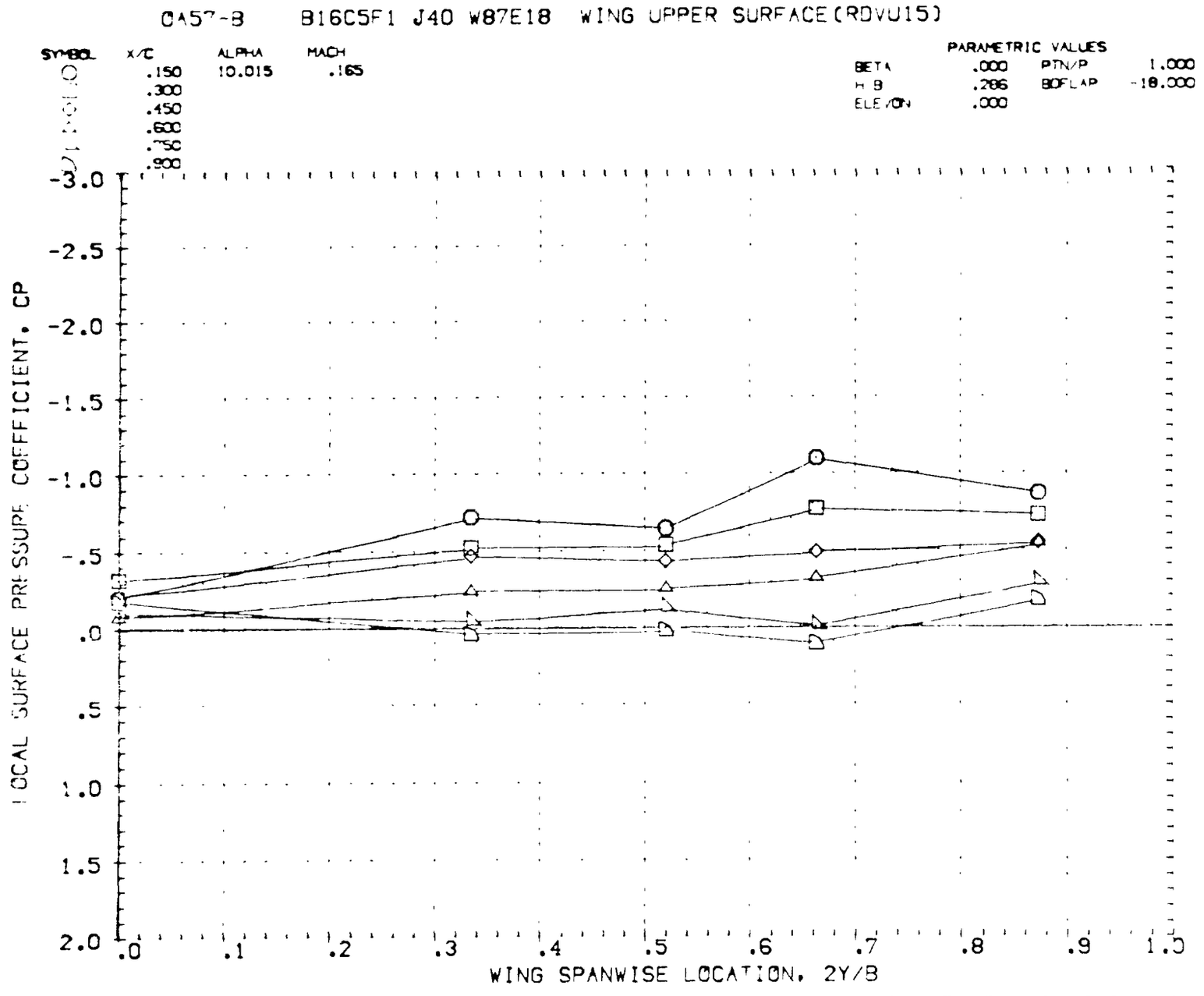


FIG 42 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

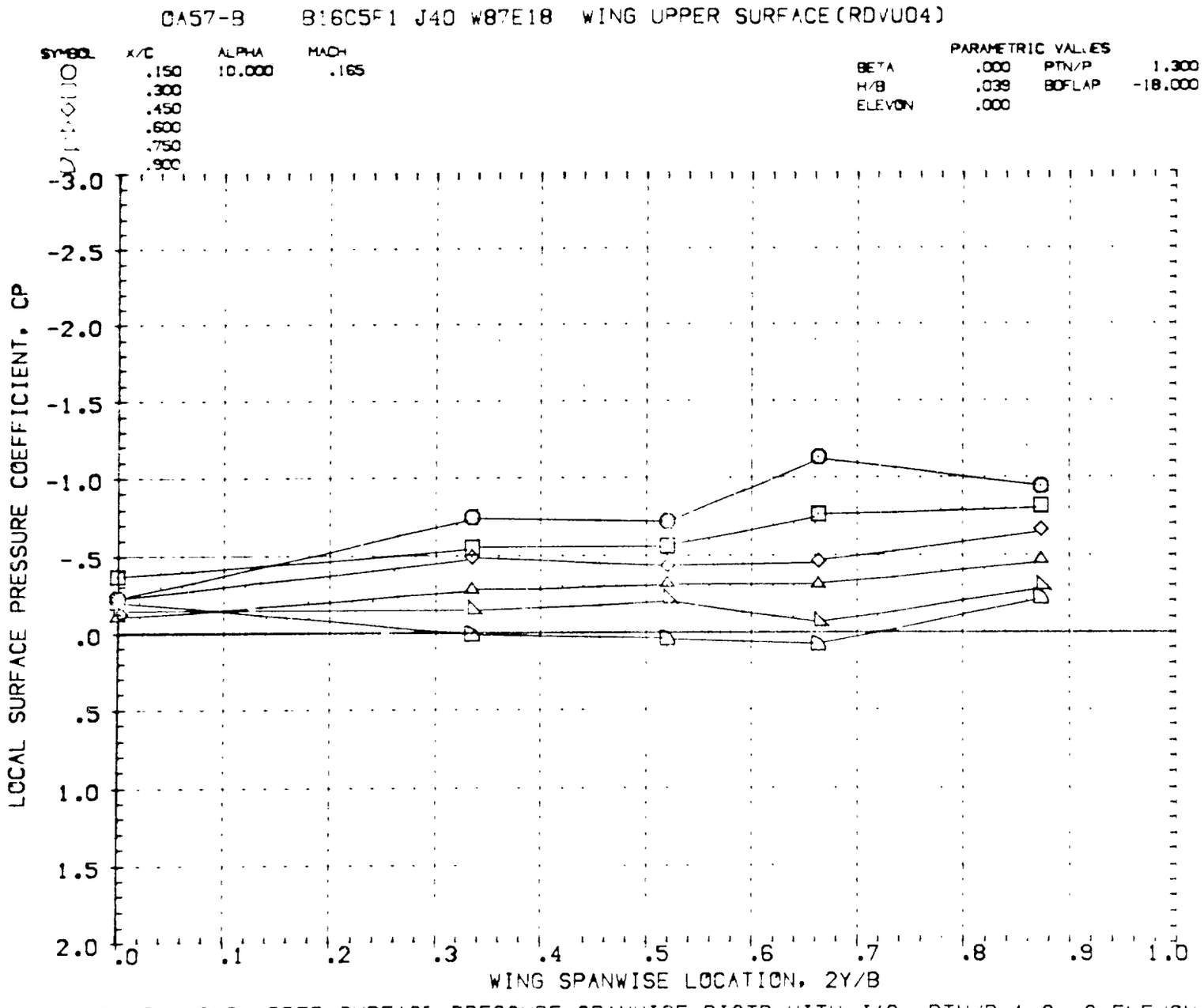


FIG 43 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

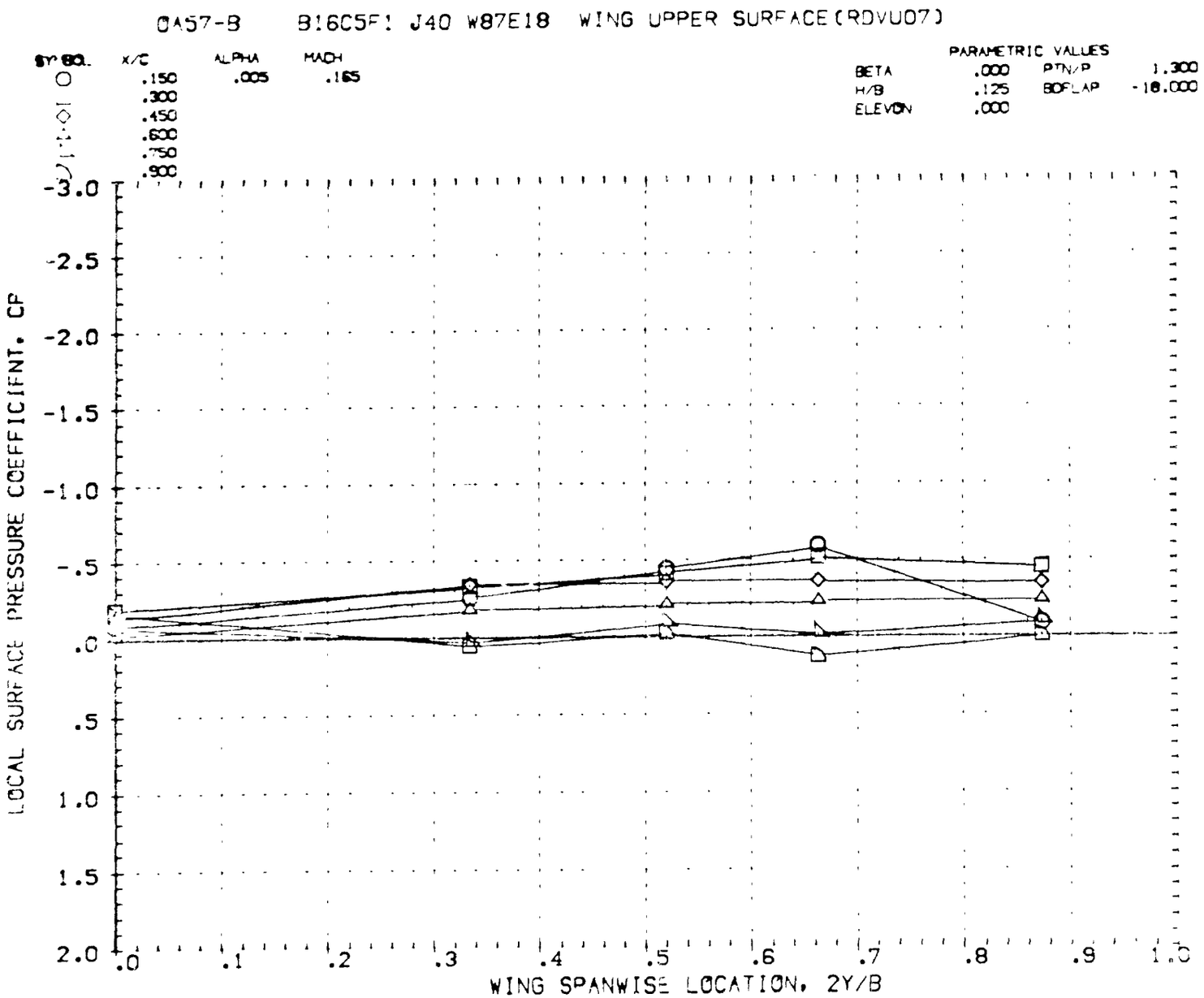


FIG 43 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

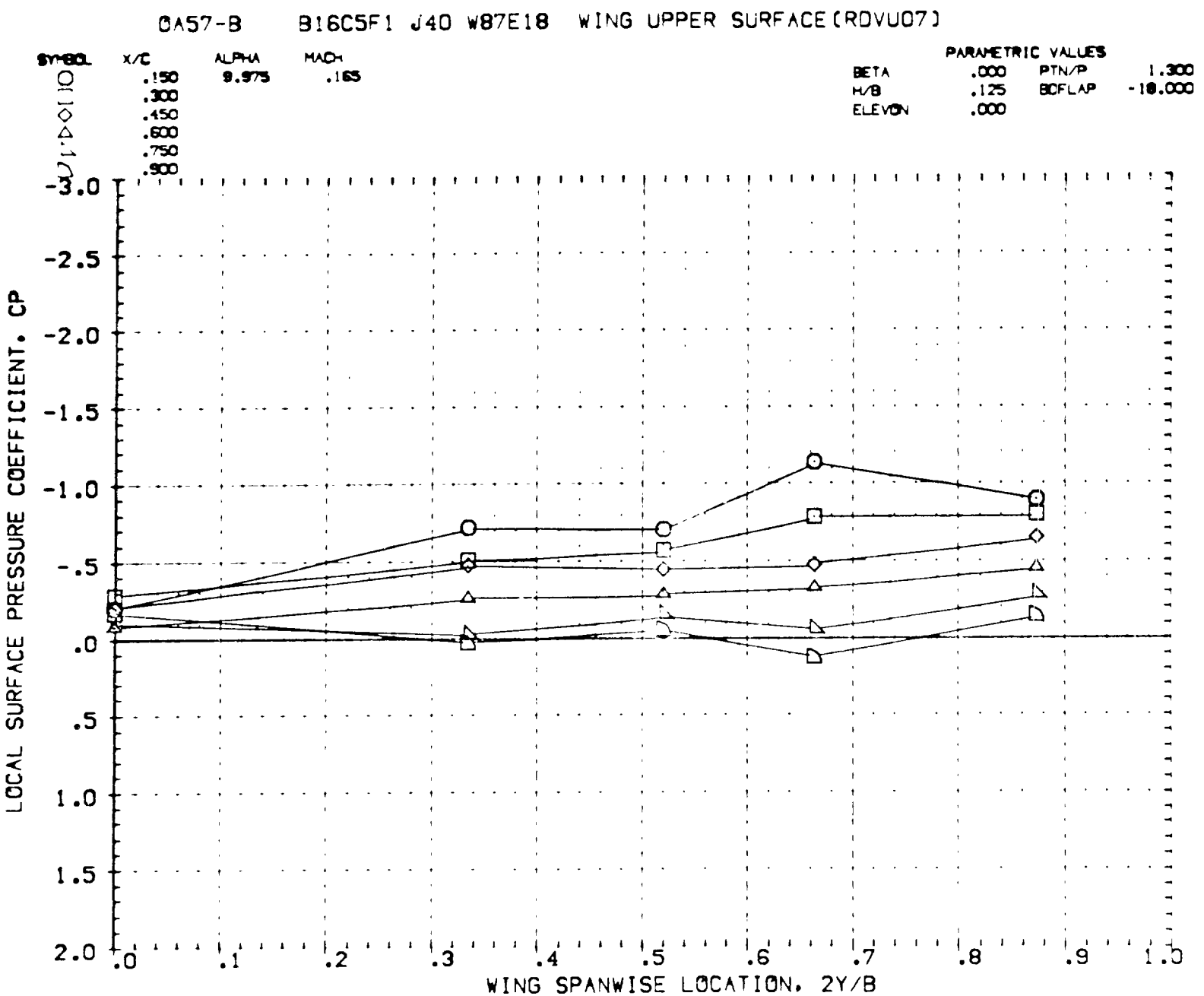


FIG 43 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

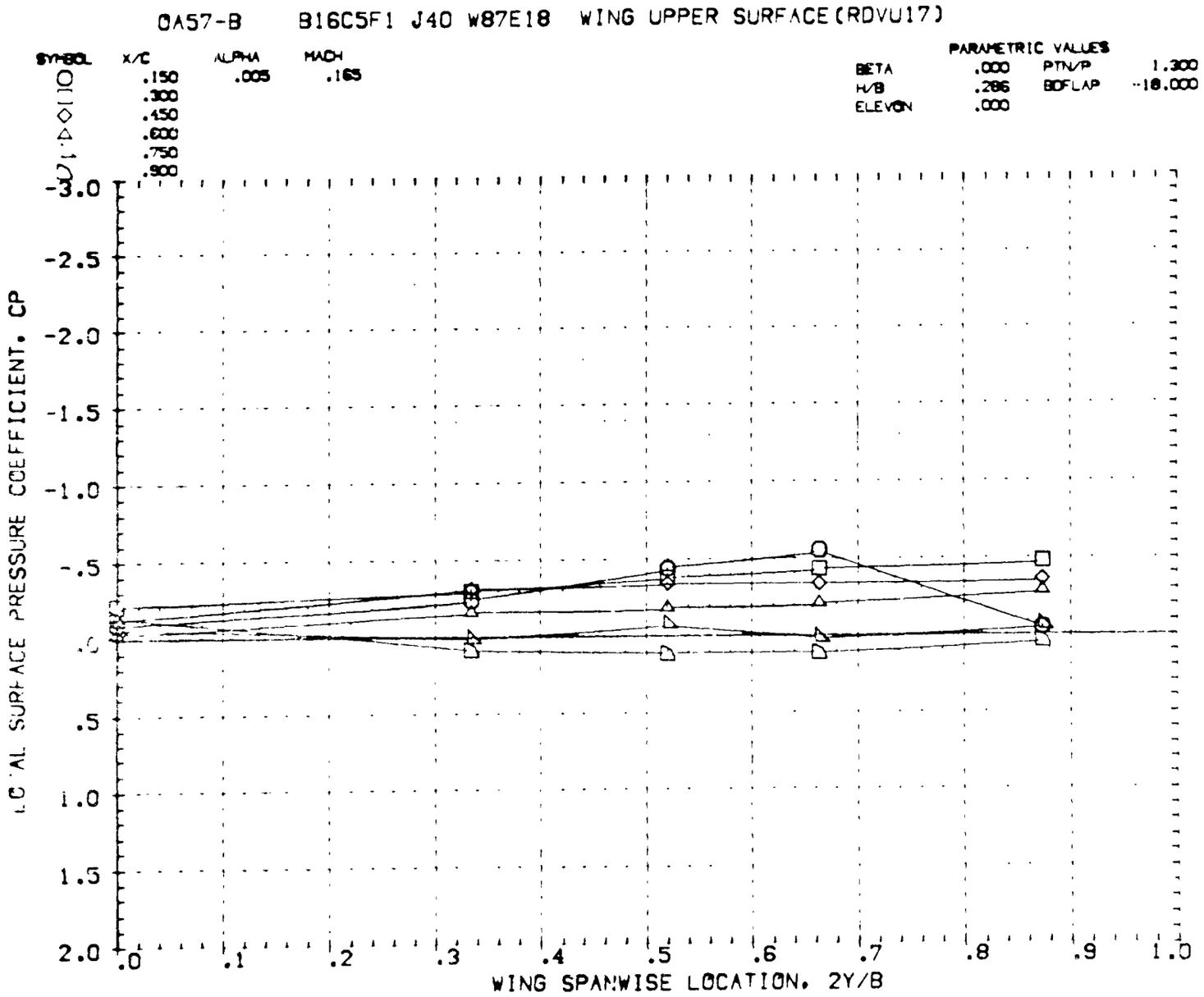


FIG 43 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

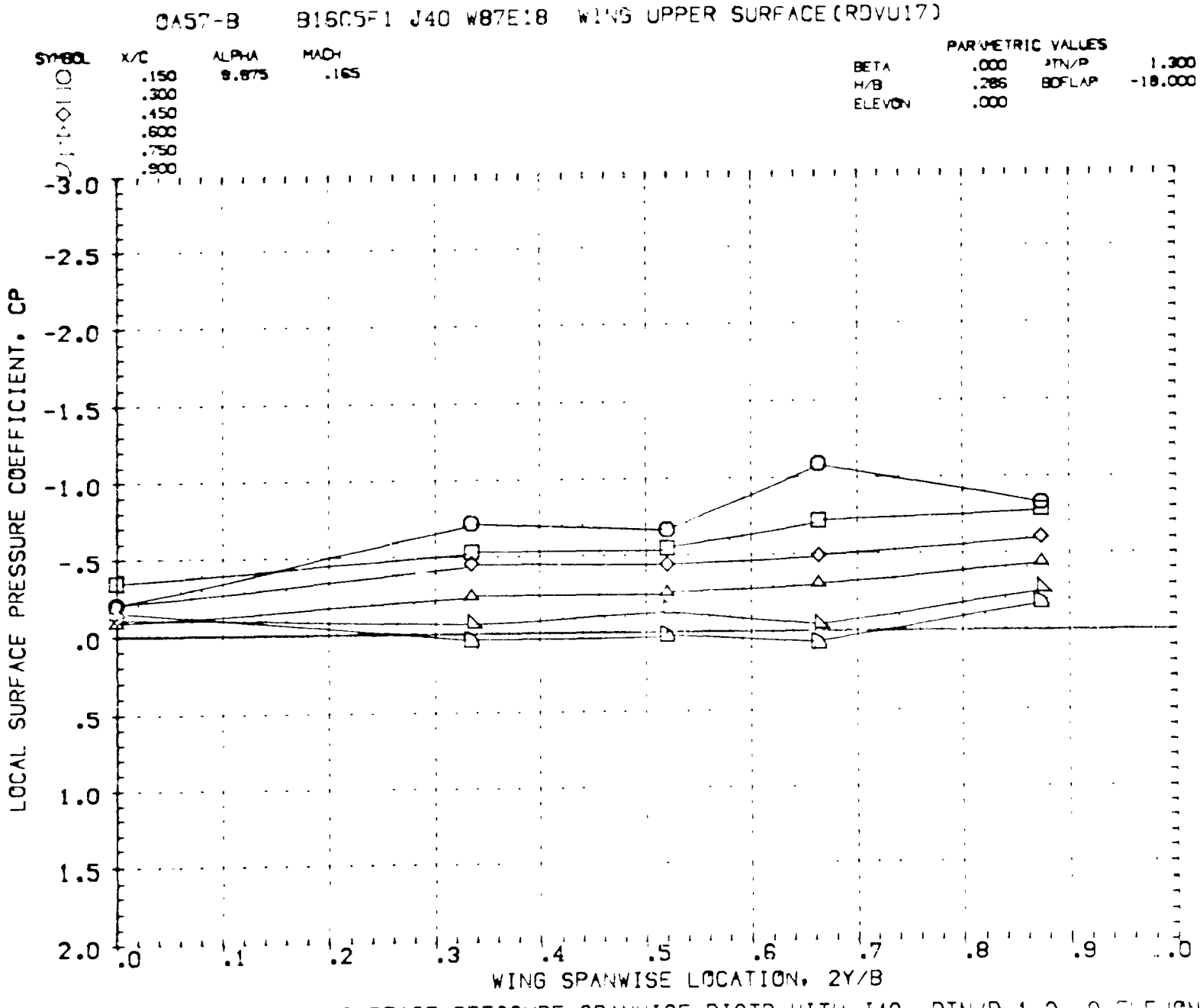


FIG 43 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

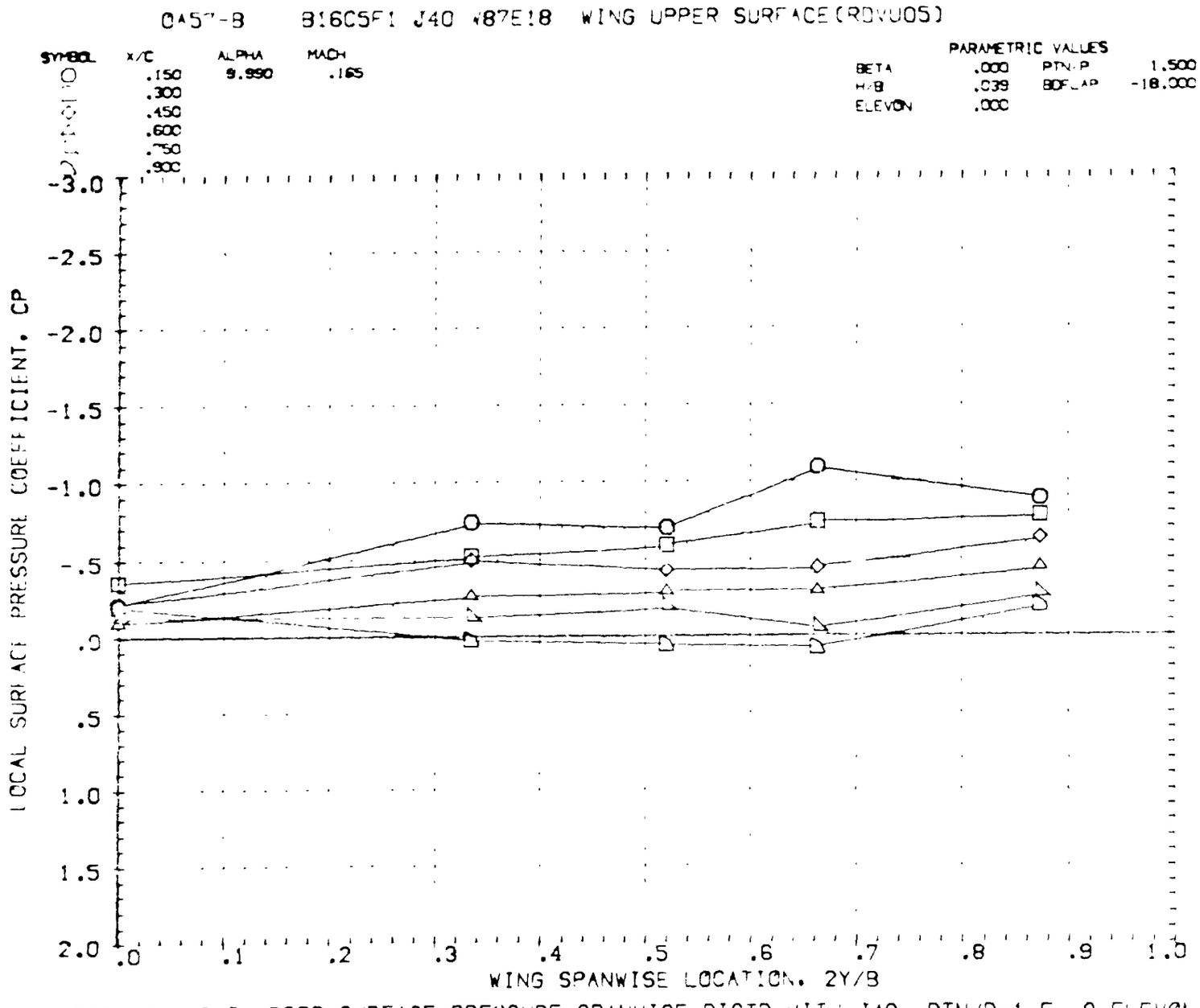


FIG 44 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

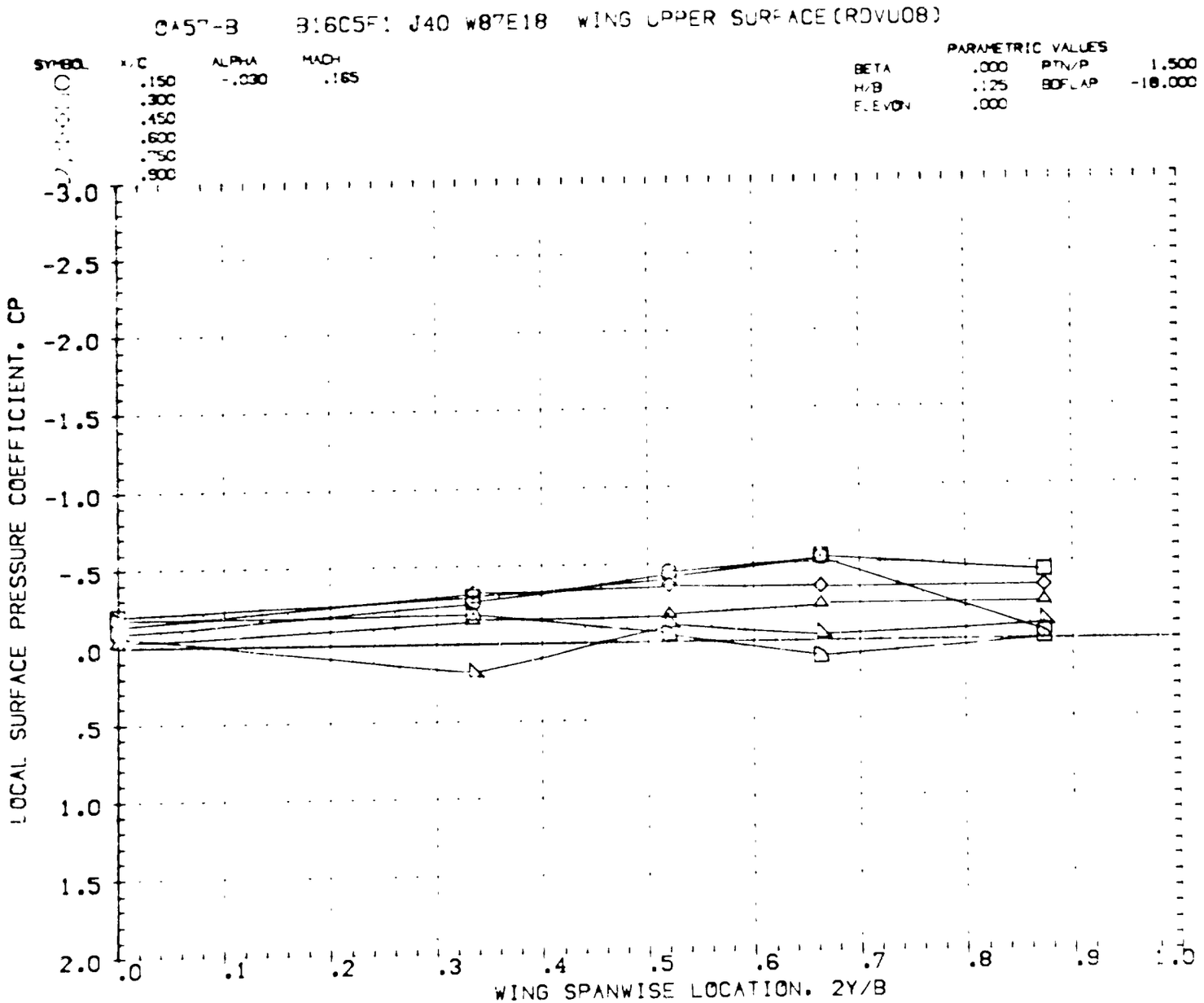


FIG 44 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

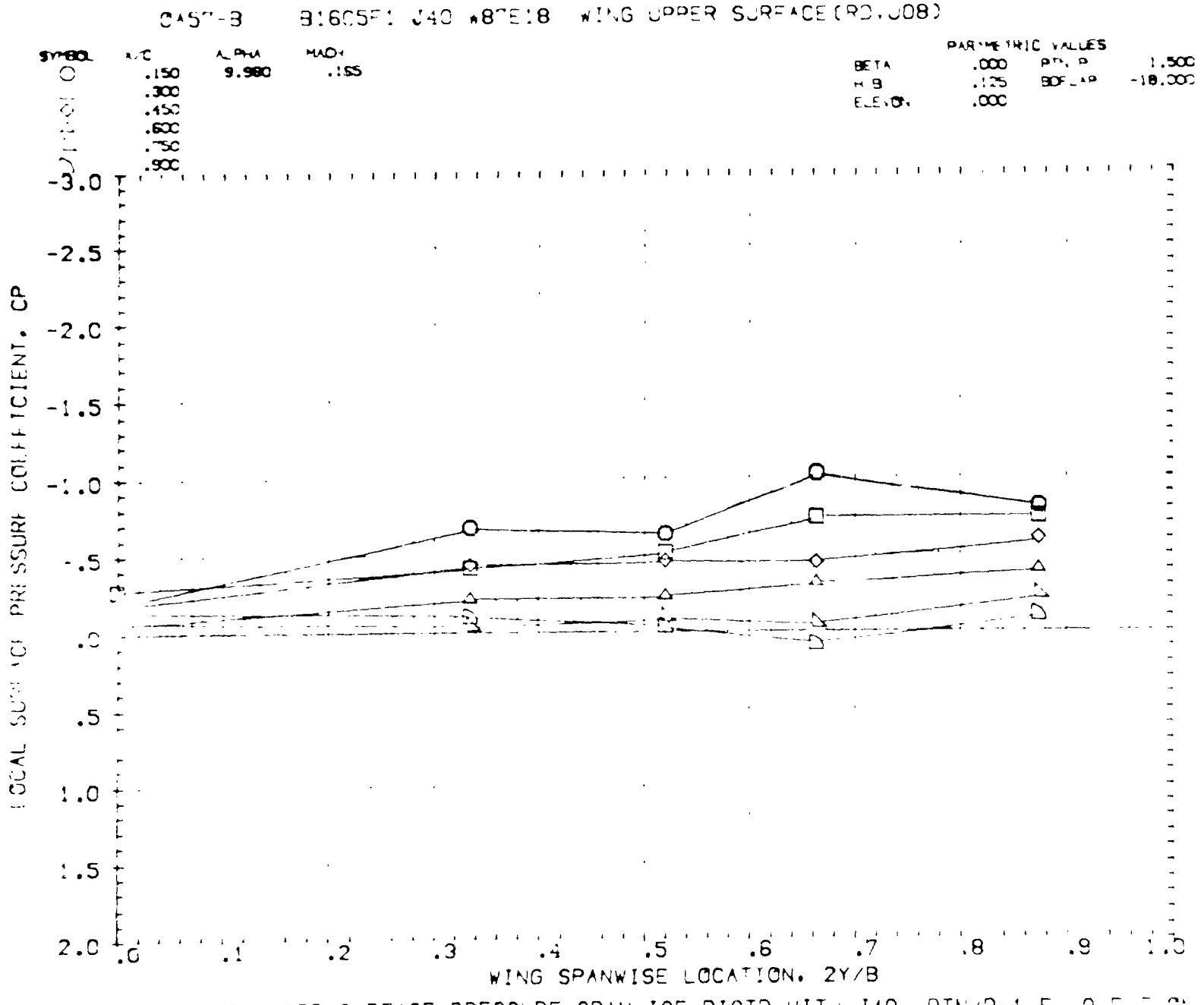


FIG 44 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

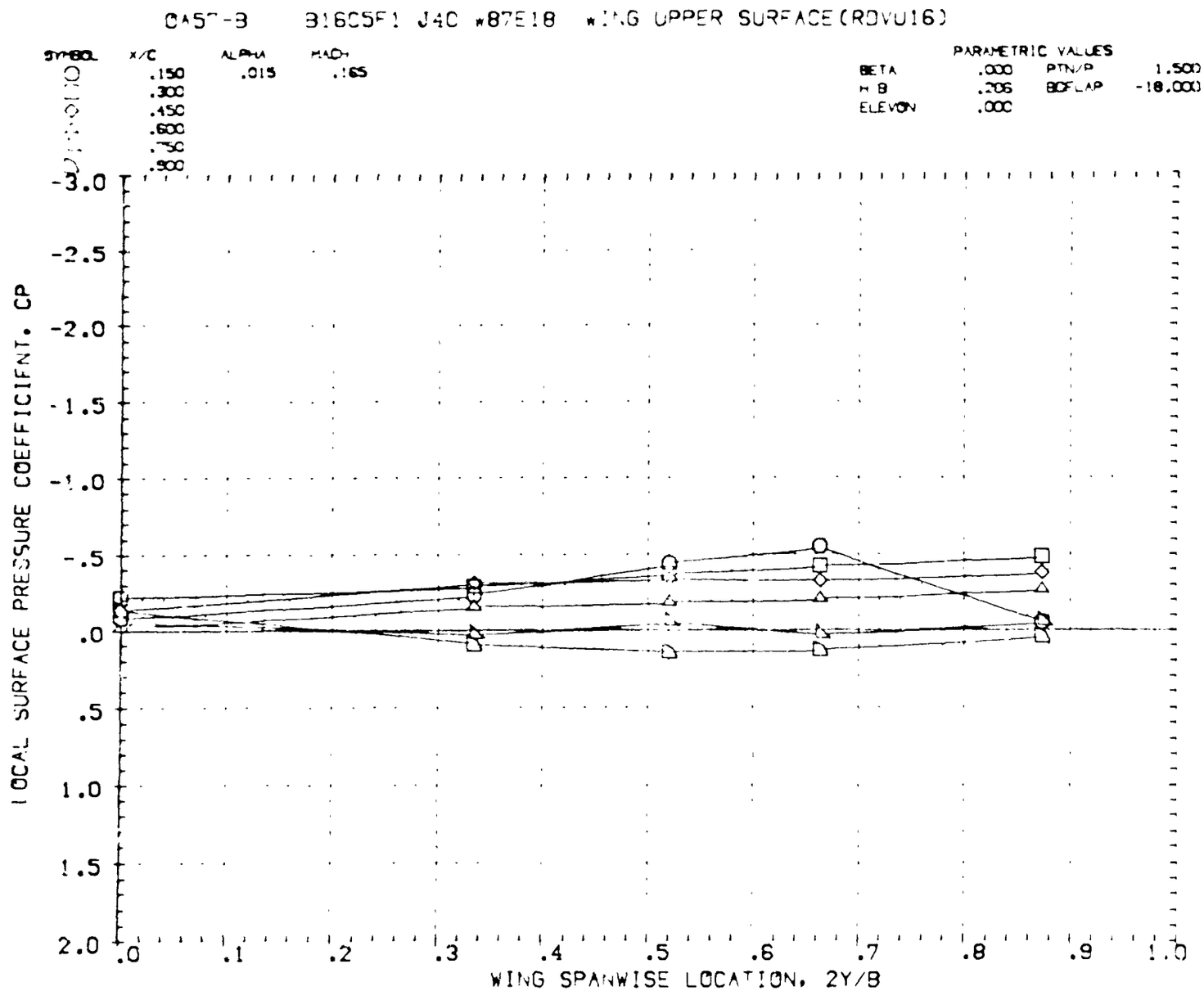


FIG 44 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

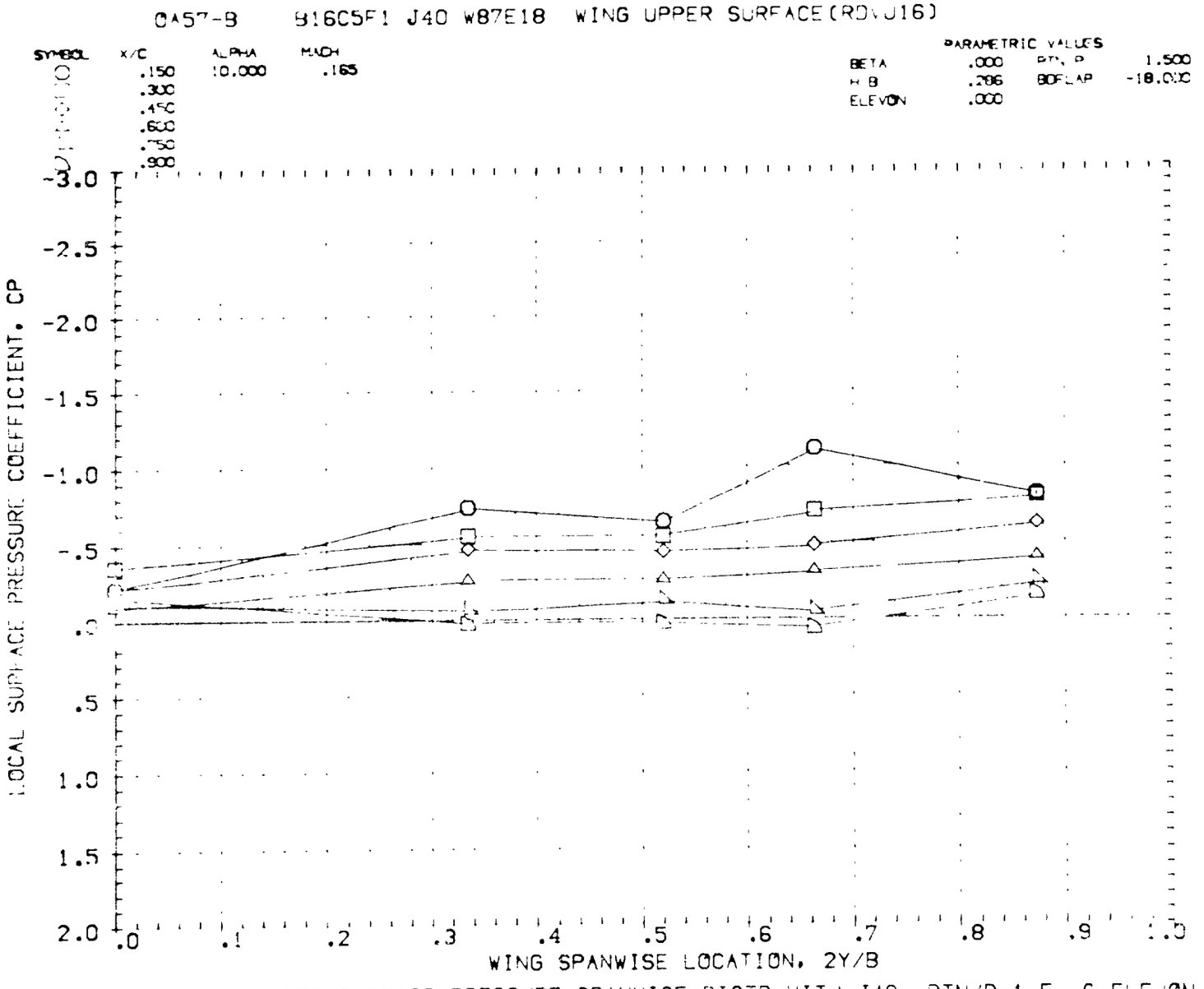


FIG 44 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

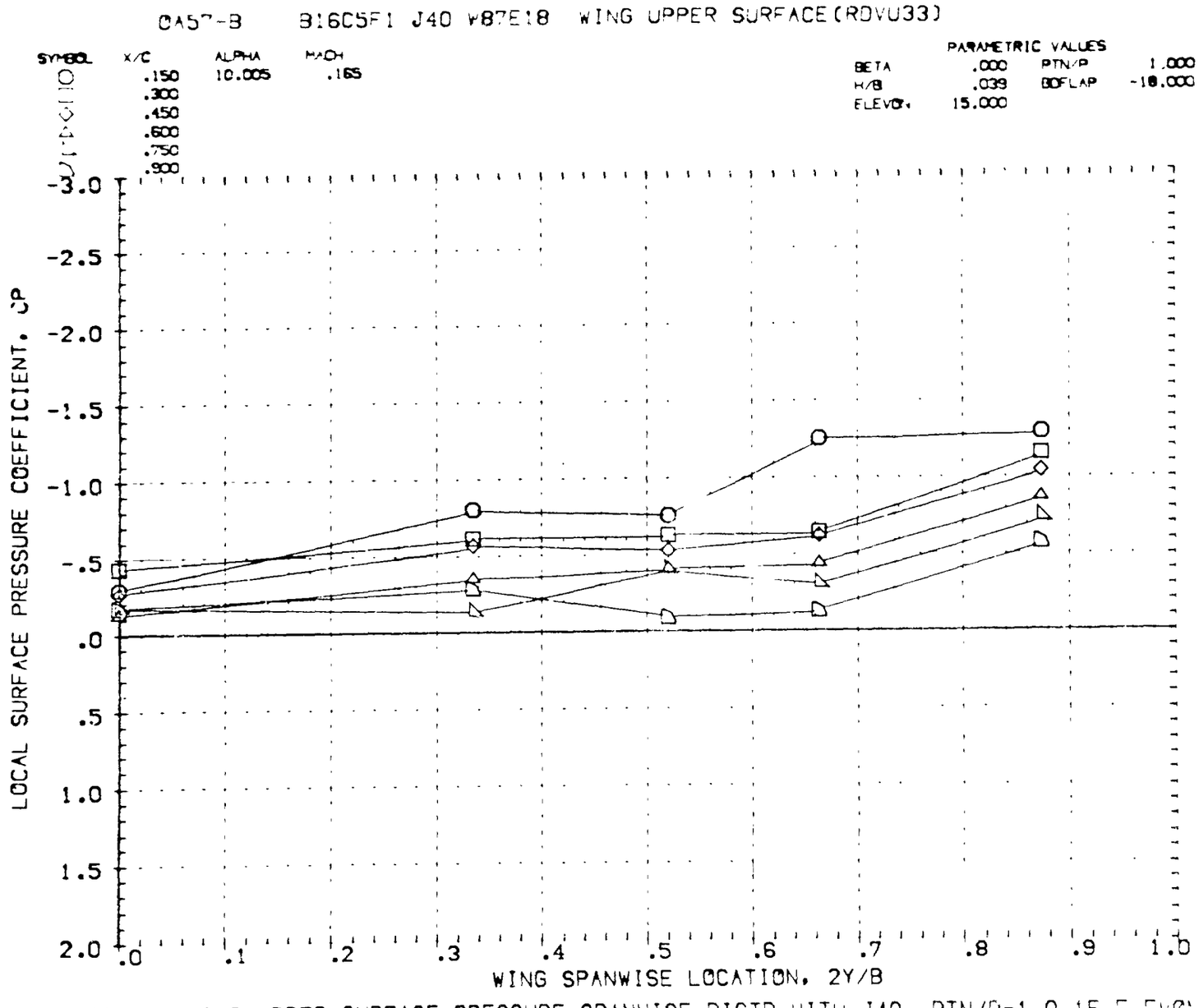


FIG 45 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

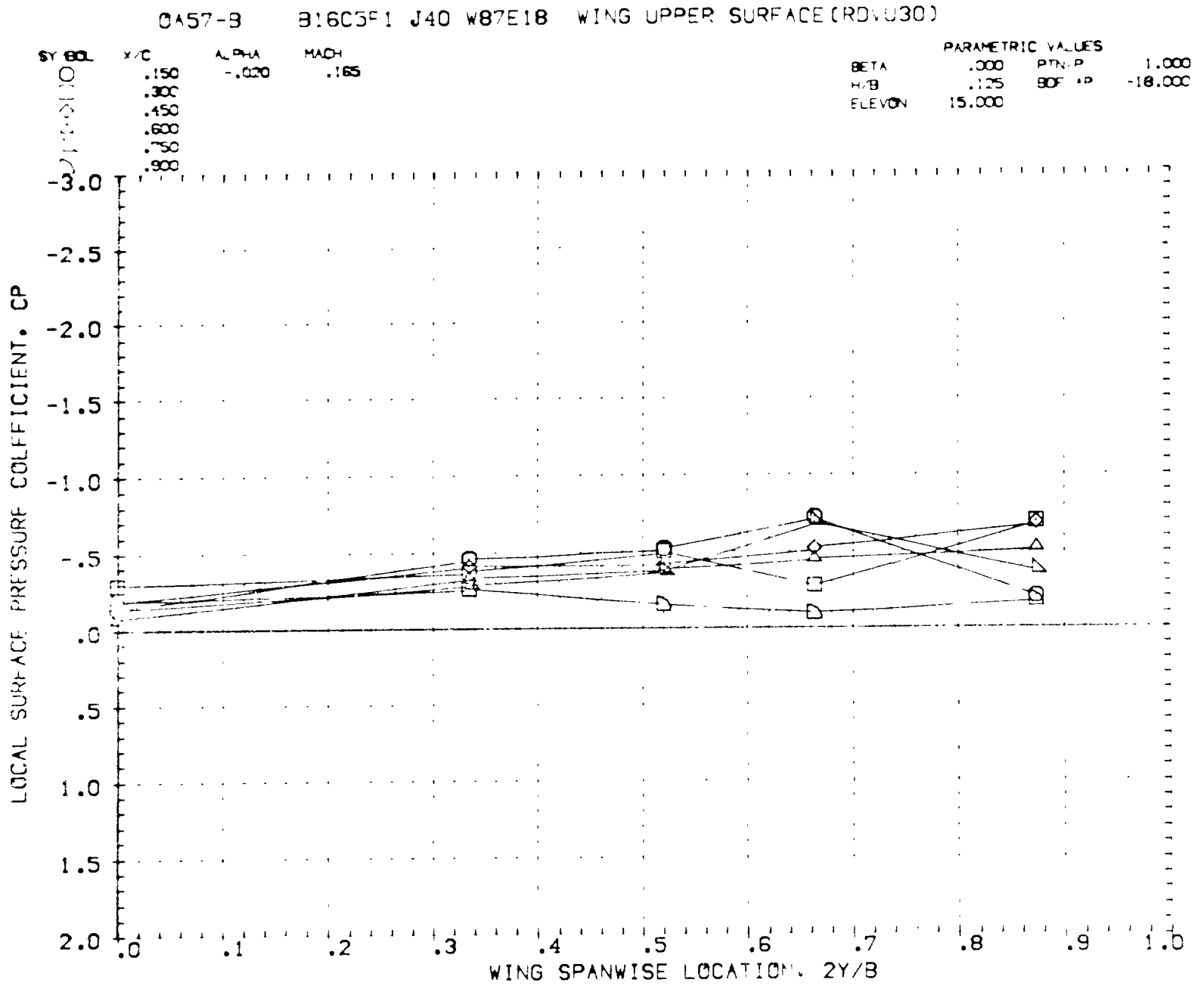


FIG 45 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 15 ELEVON

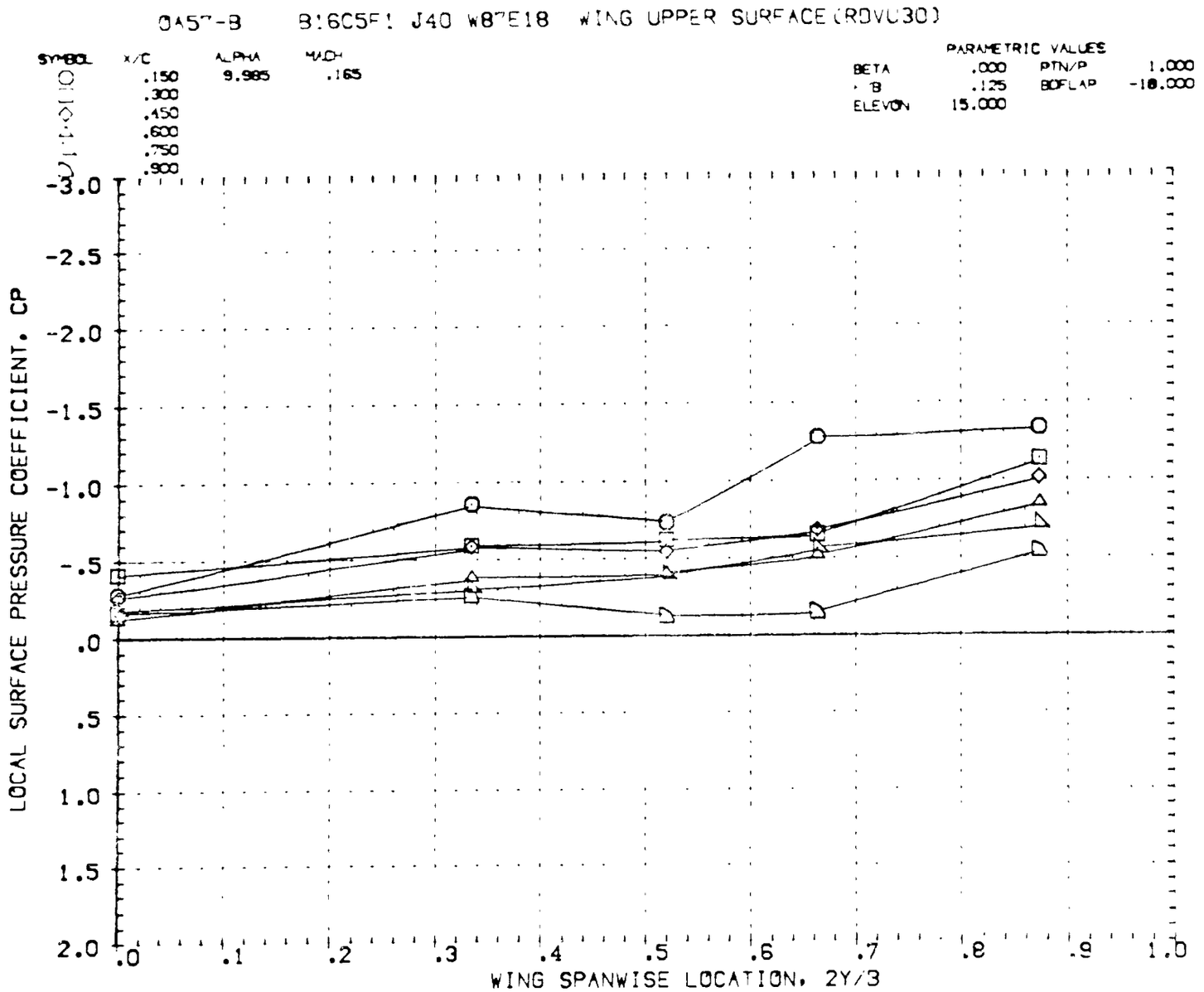


FIG 45 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 15 ELEVON

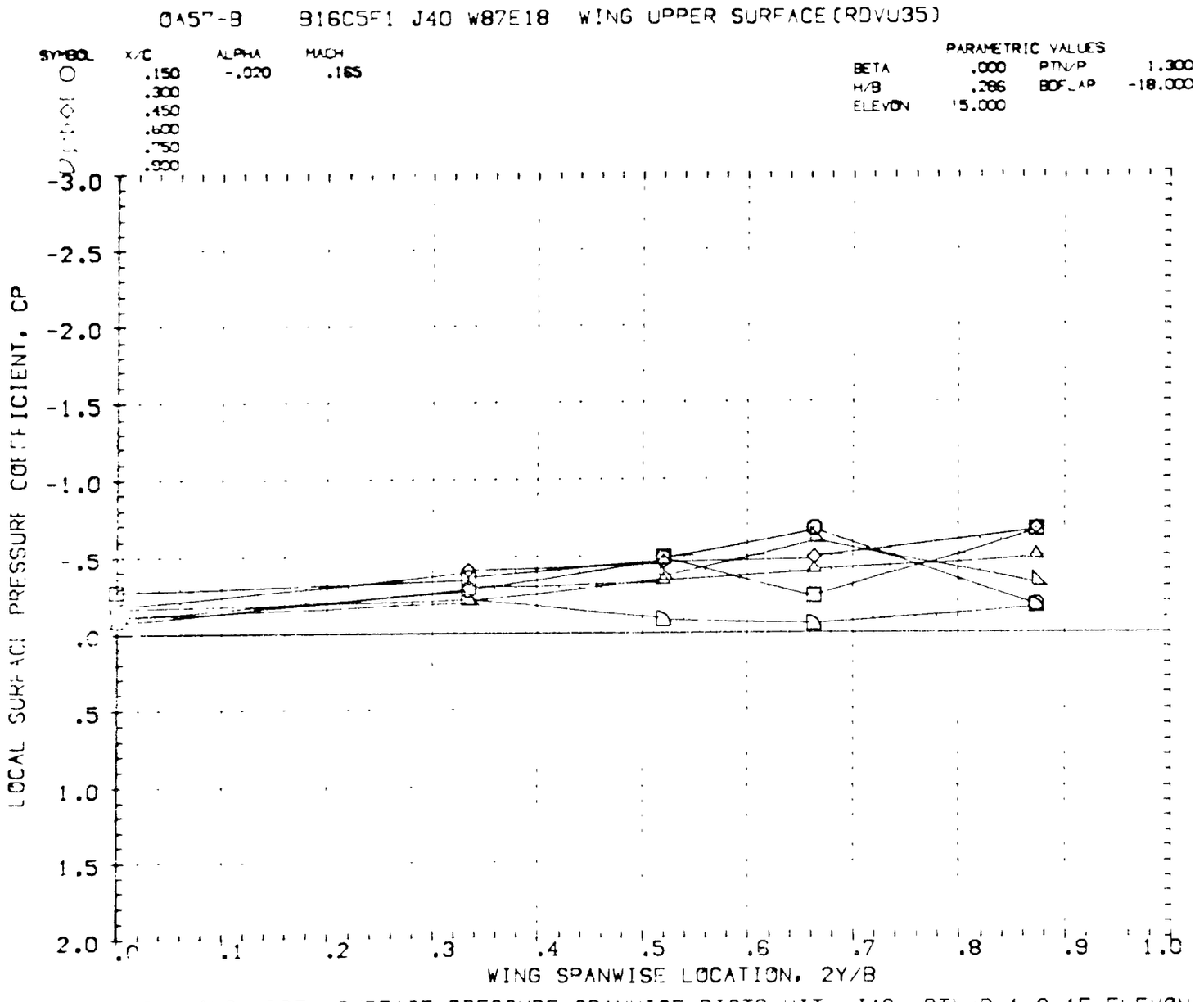


FIG 45 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

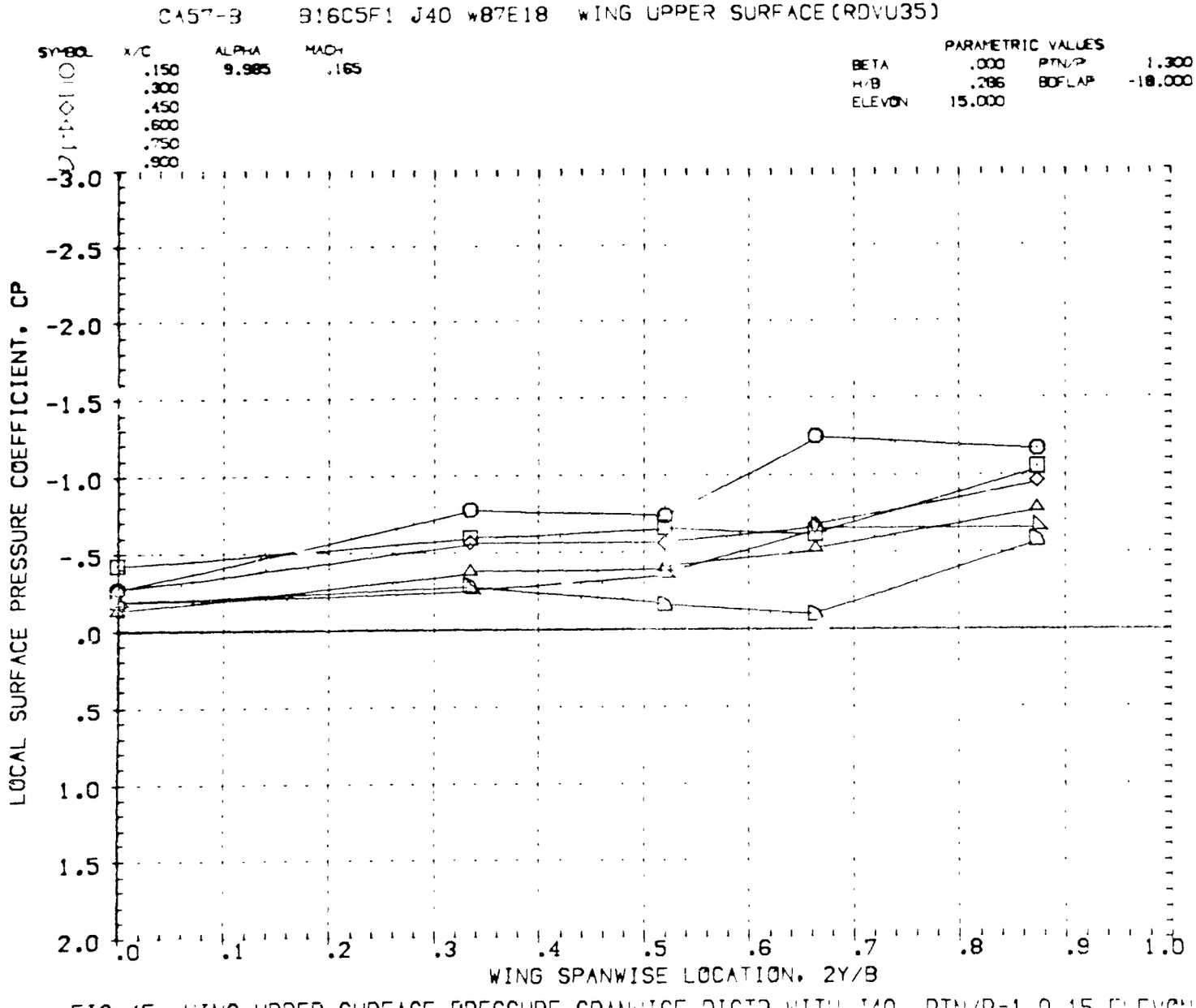


FIG 45 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

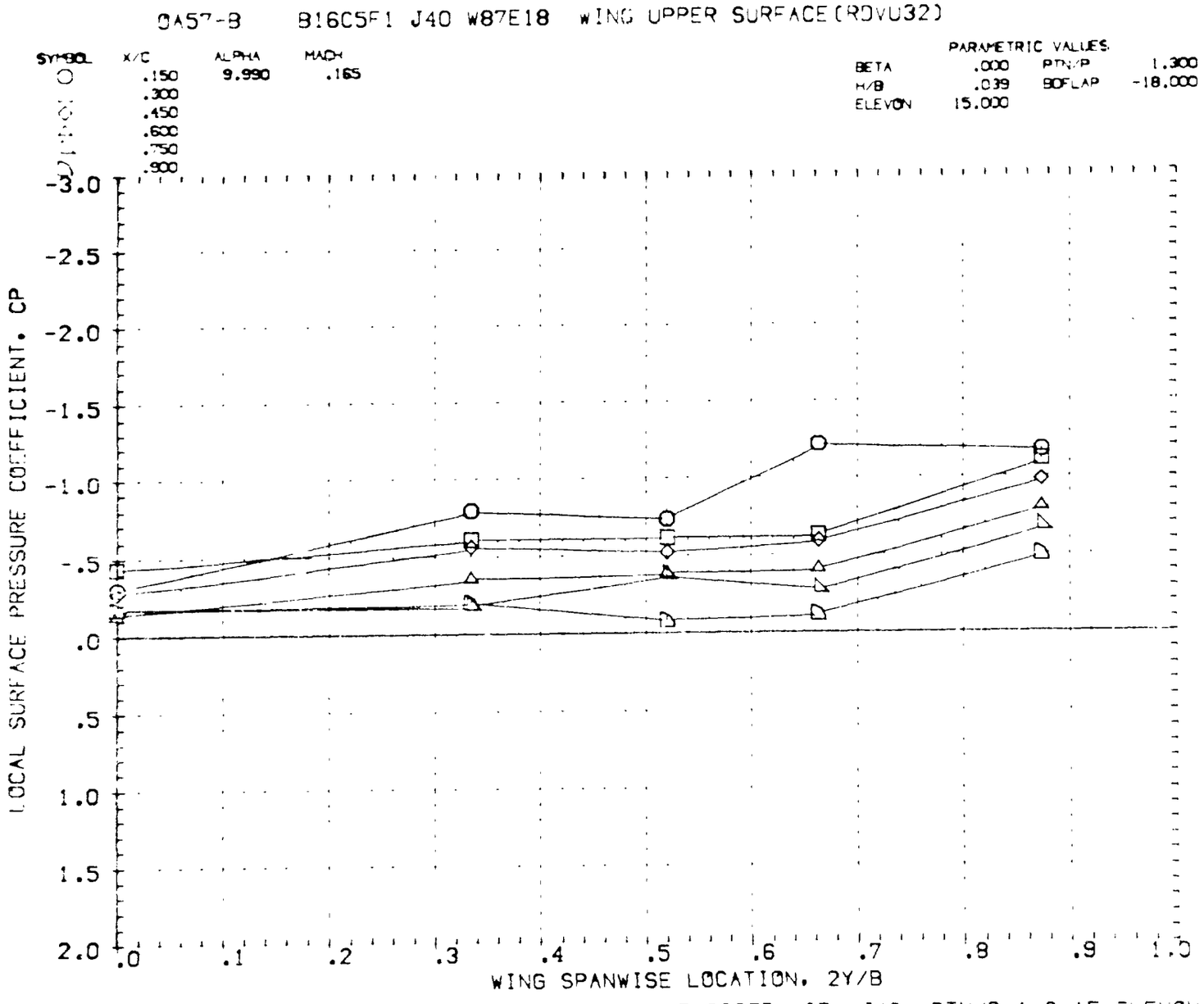


FIG 46 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

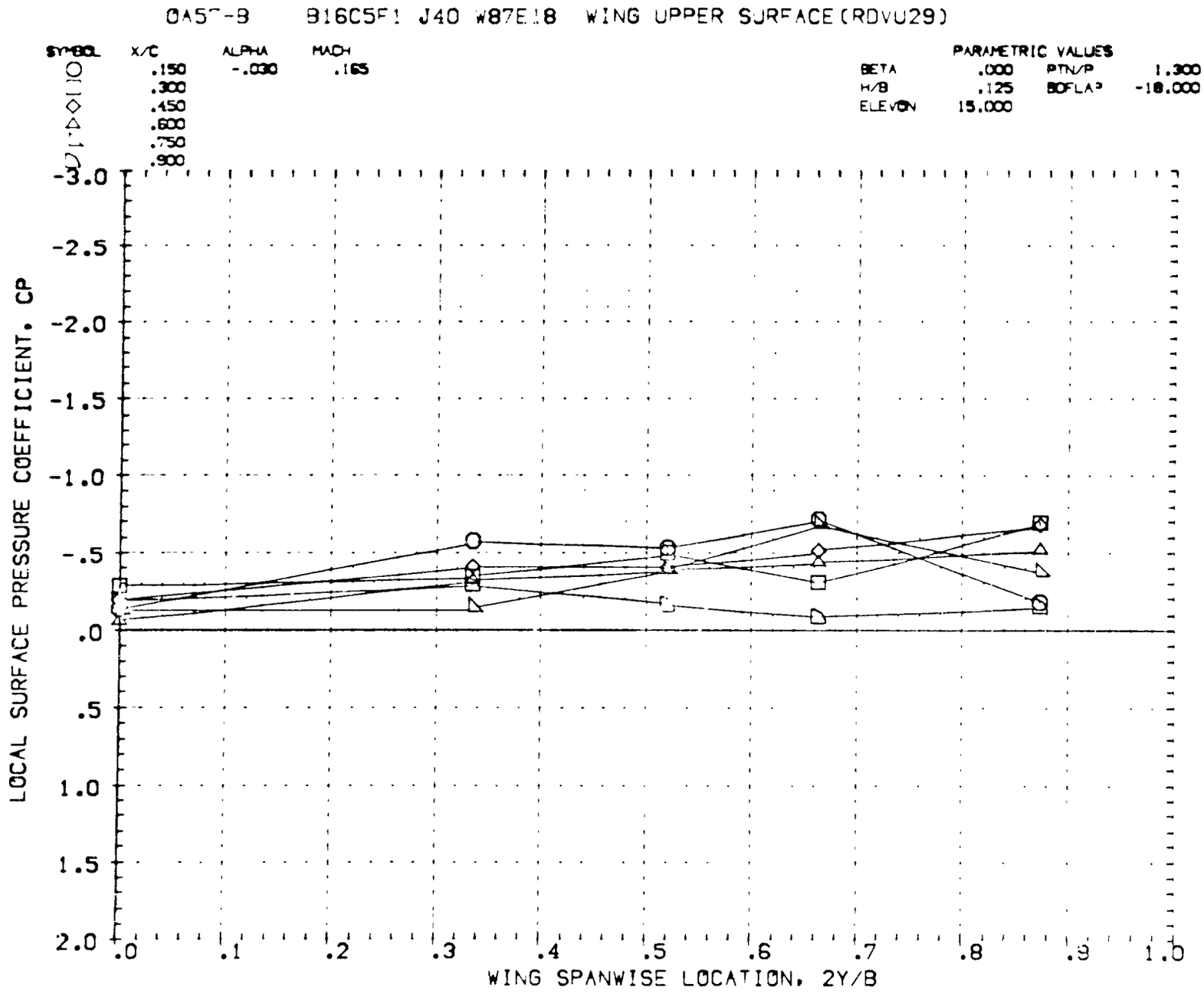


FIG 46 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

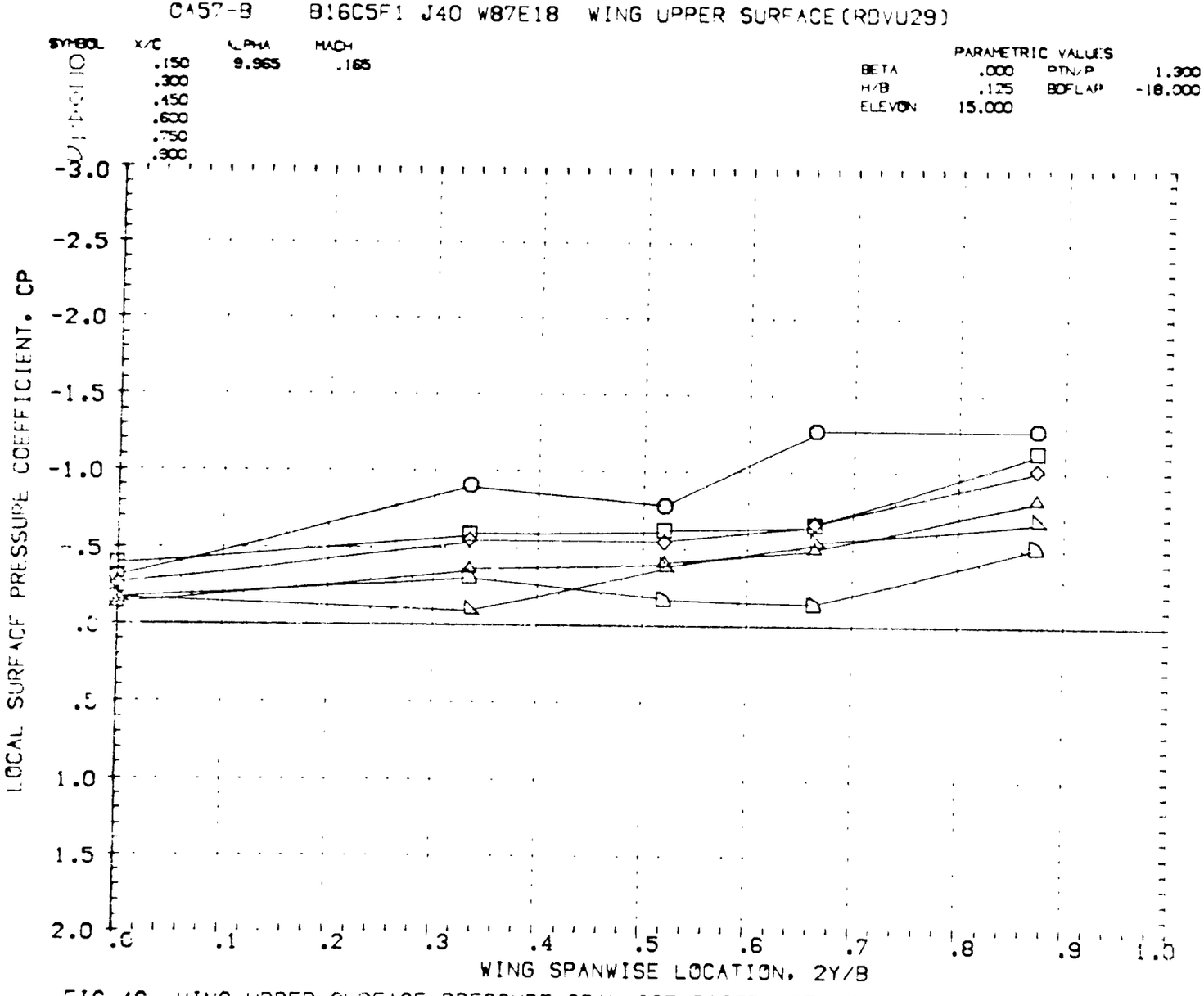


FIG 46 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

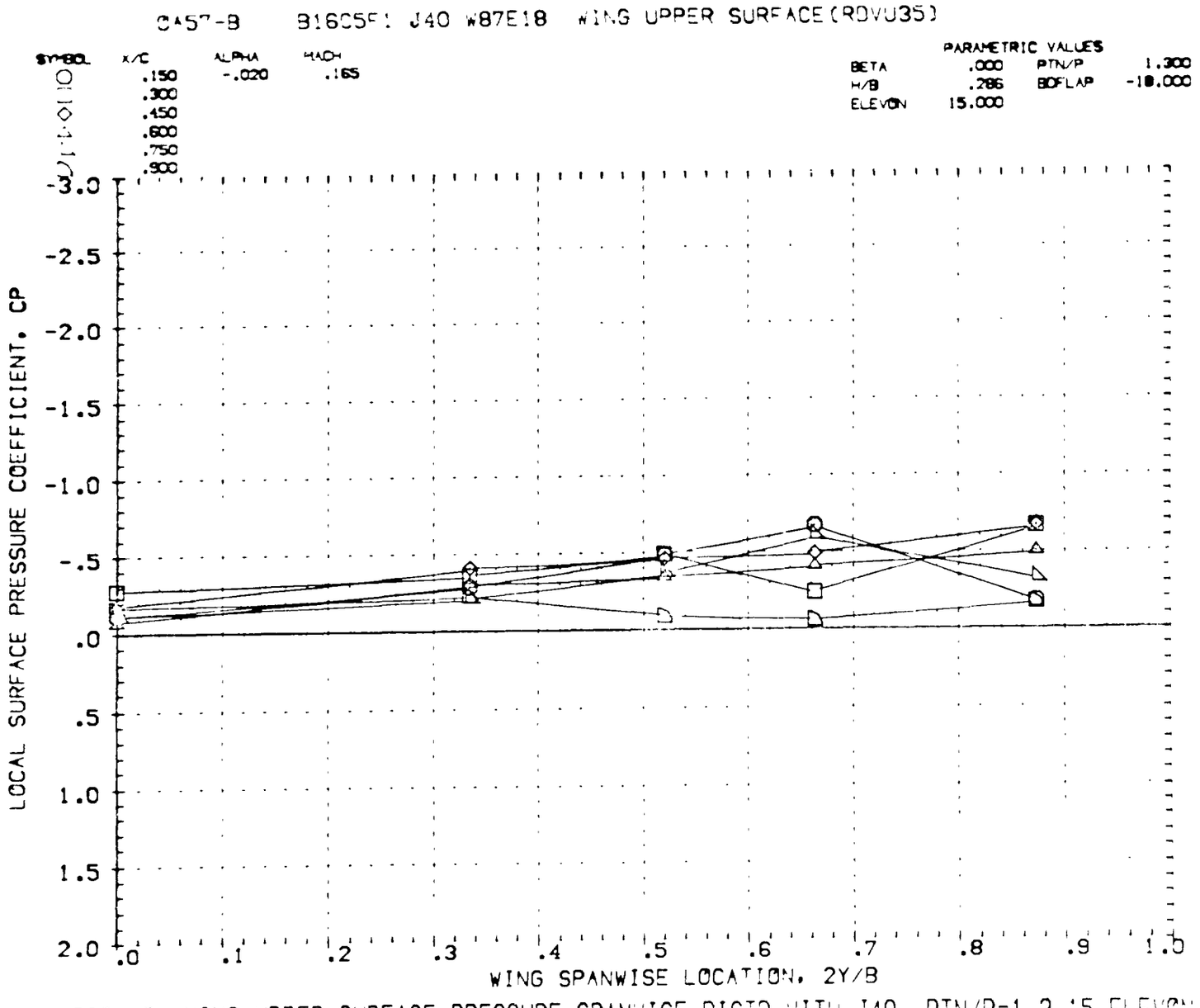


FIG 46 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 15 ELEVON

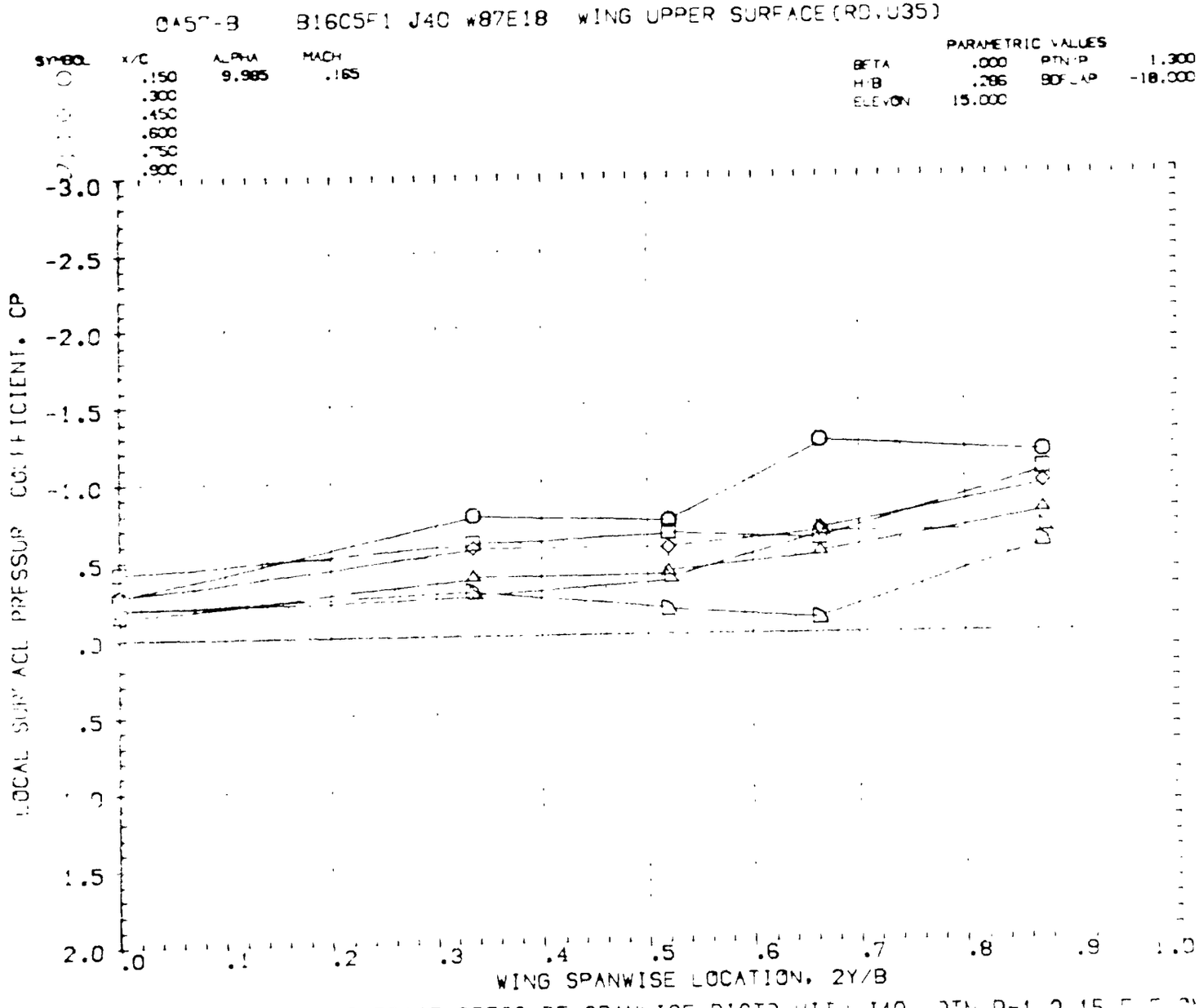


FIG 46 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN P=1.3,15 ELEVON

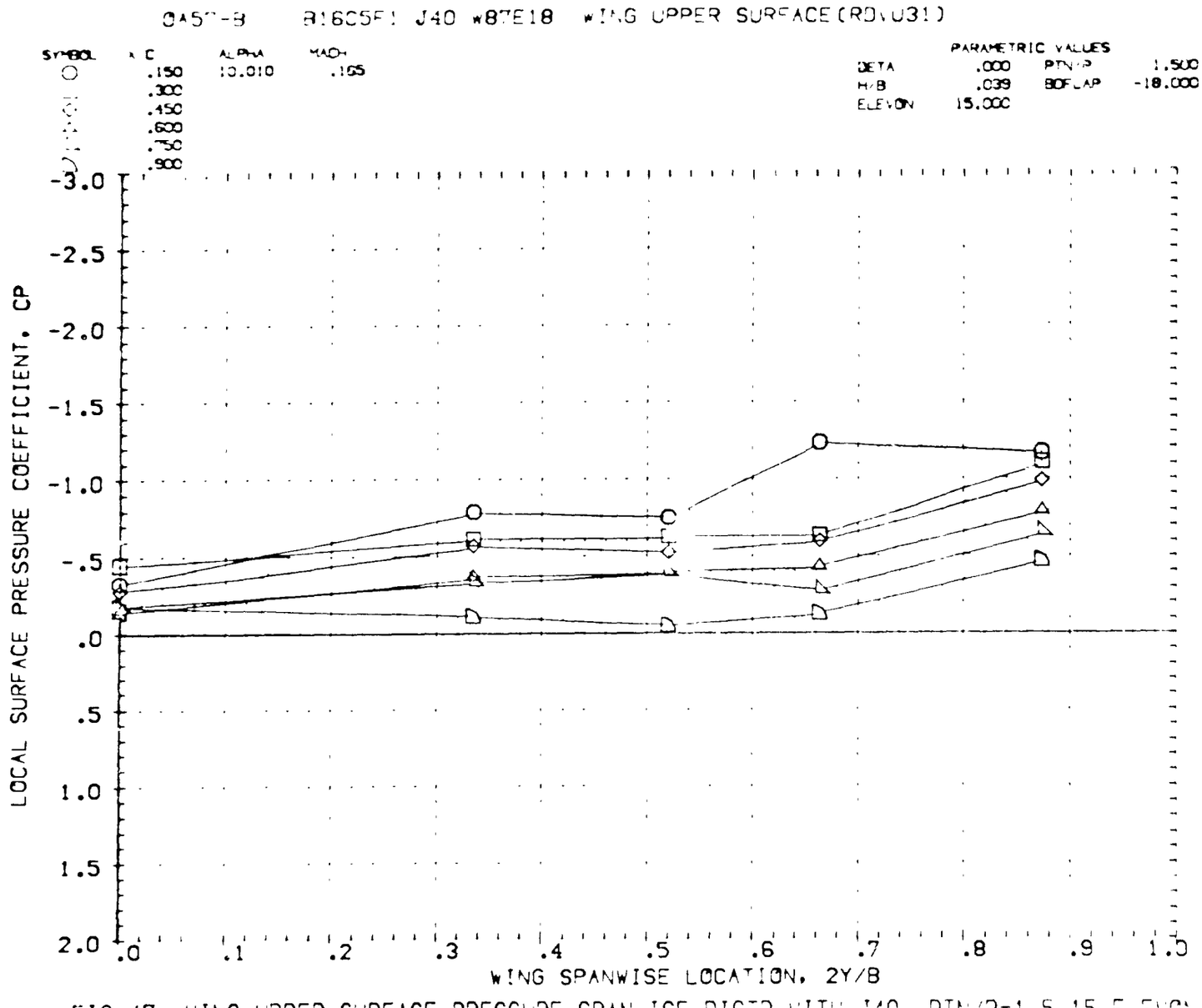


FIG 47 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 15 ELEVON

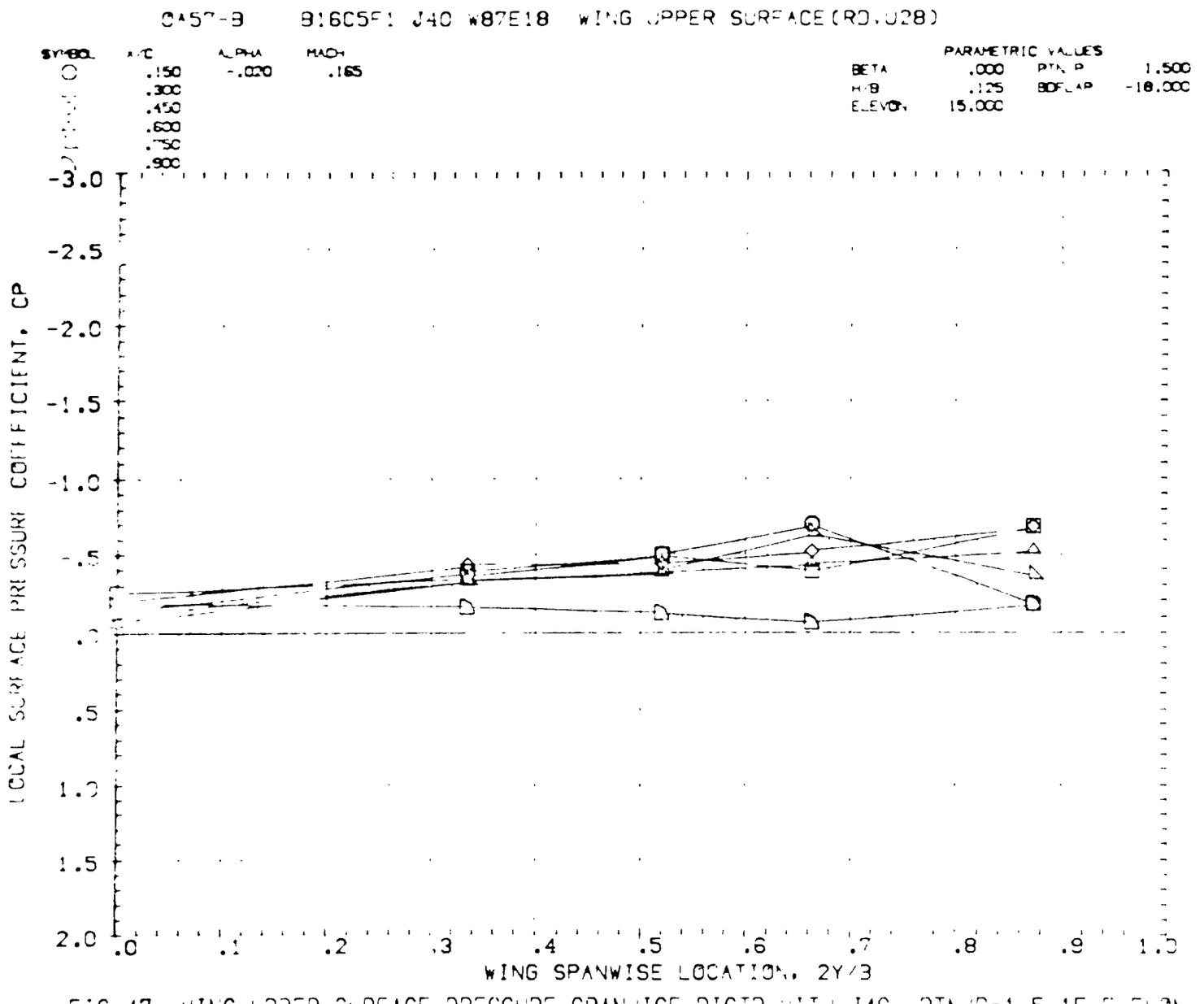


FIG 47 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J4C, PTN/P=1.5,15 ELEVON

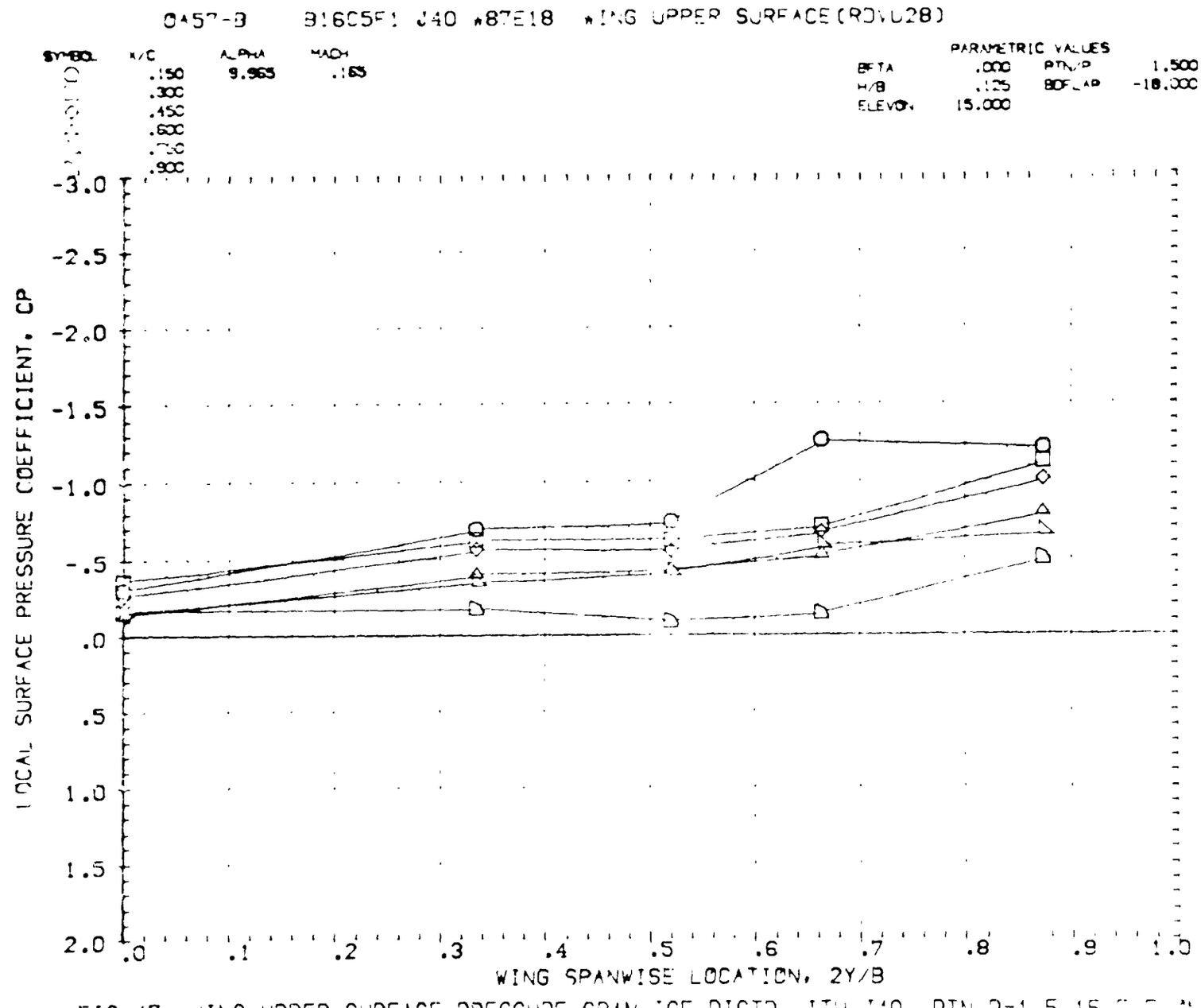


FIG 47 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 15 ELEVON

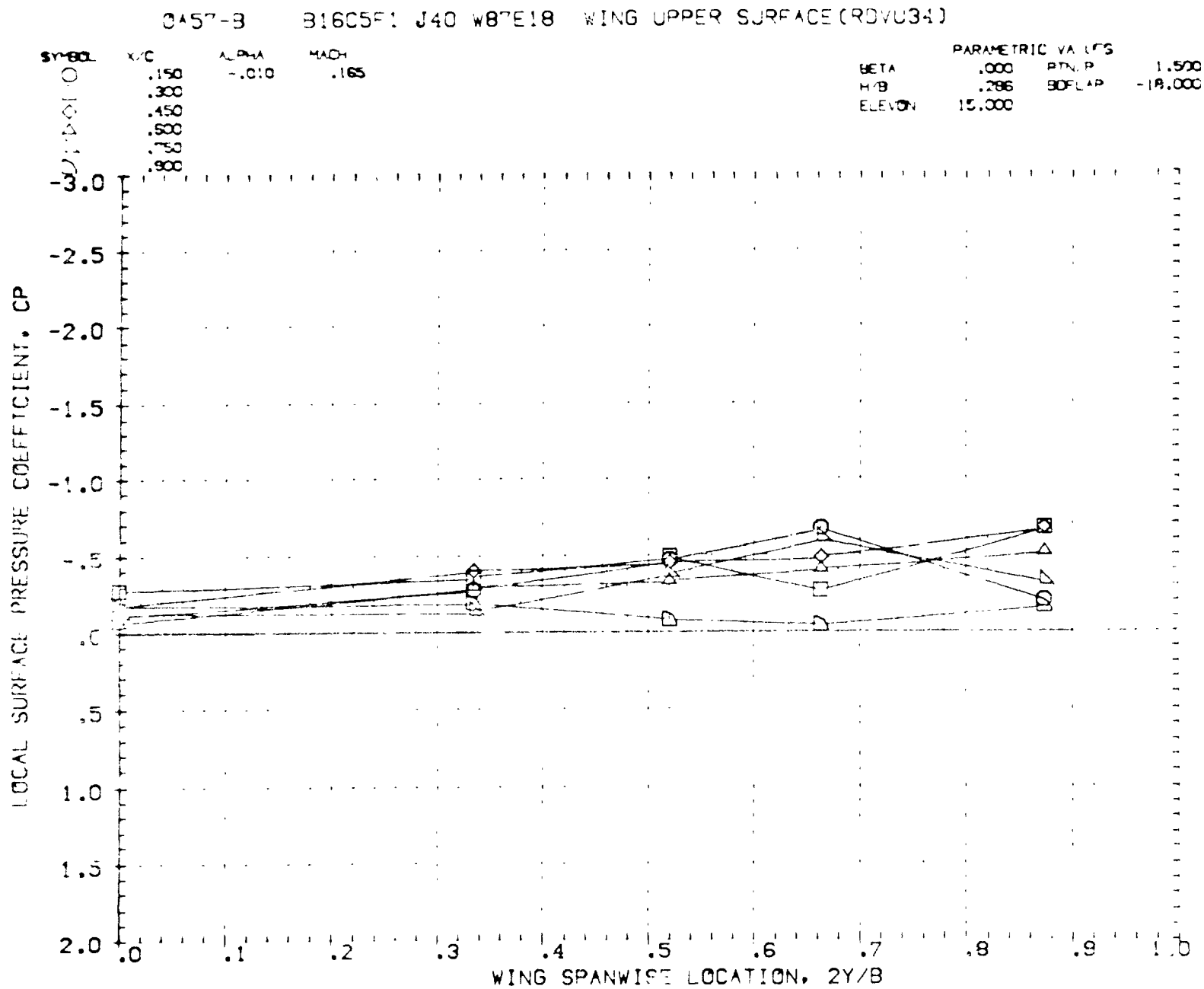


FIG 47 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 15 ELEVON

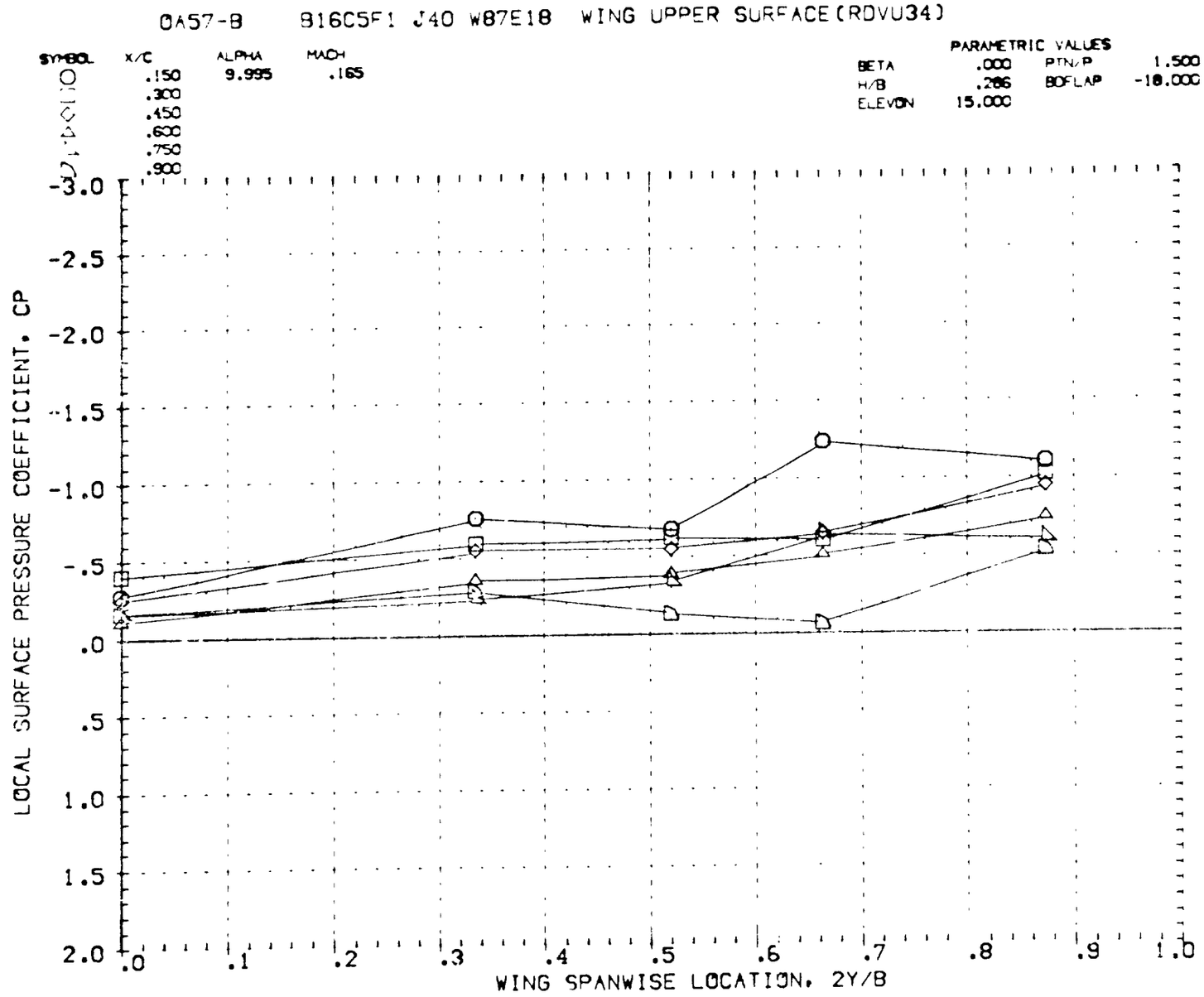


FIG 47 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5,15 ELEVON

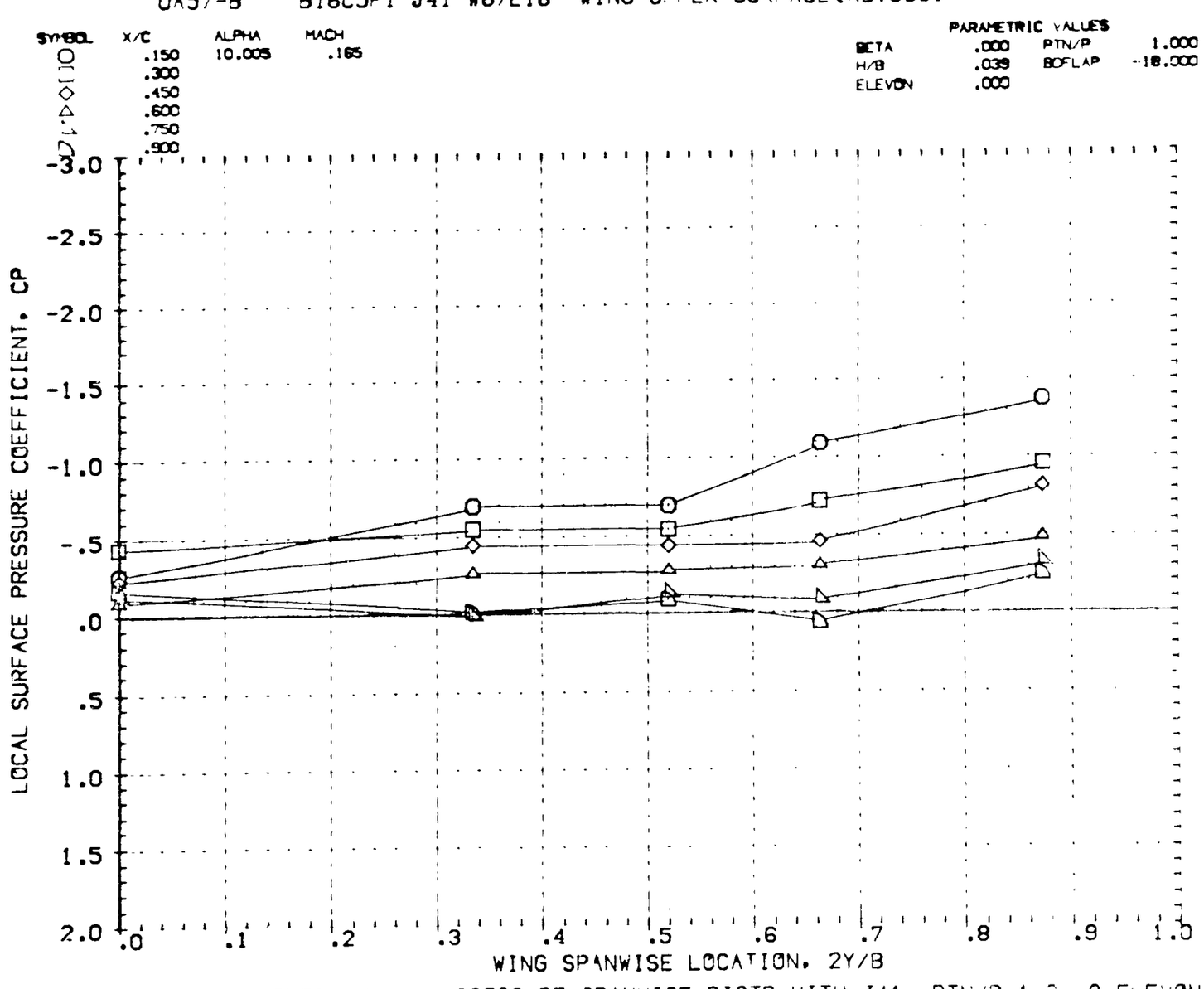


FIG 48 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

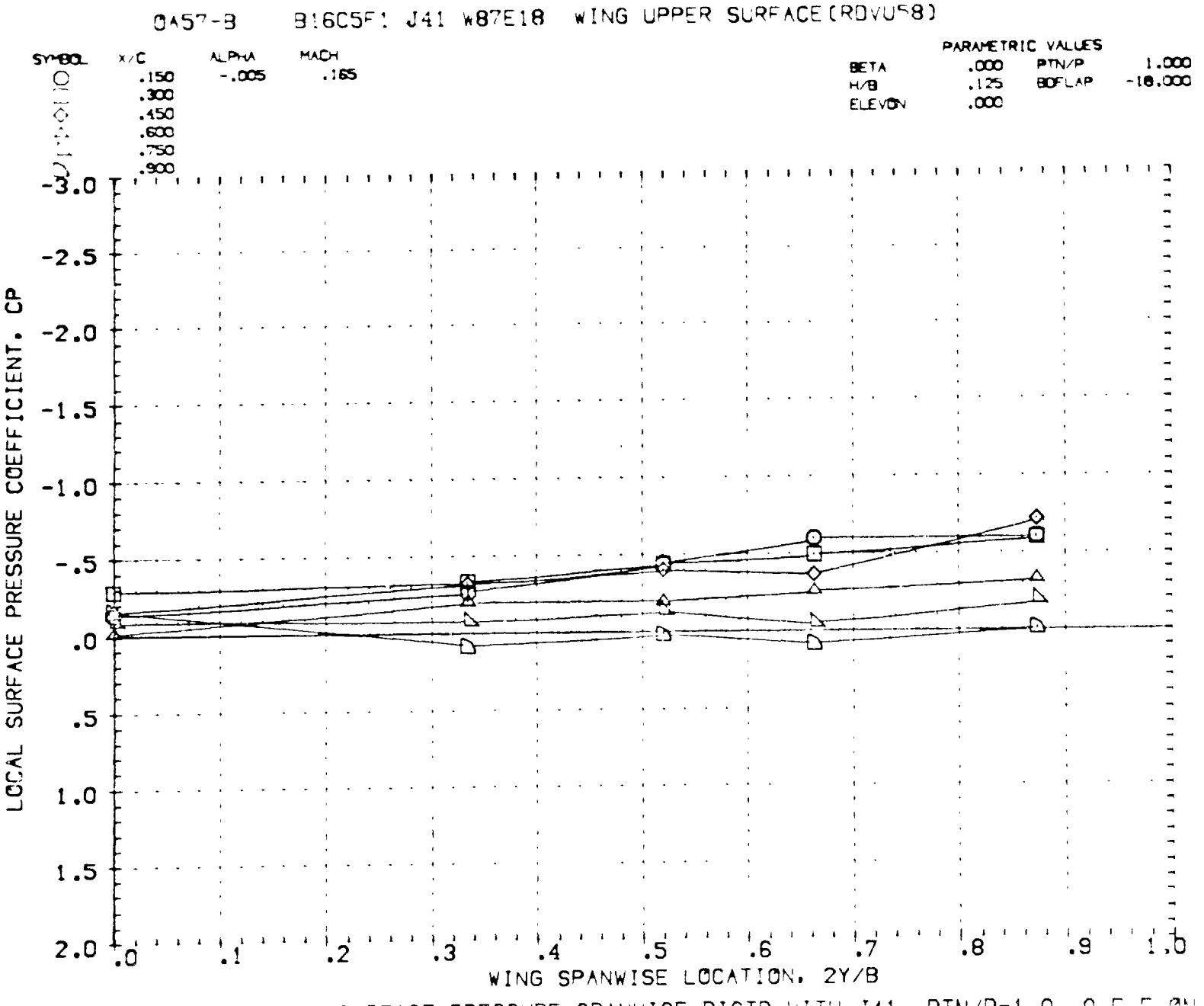


FIG 48 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

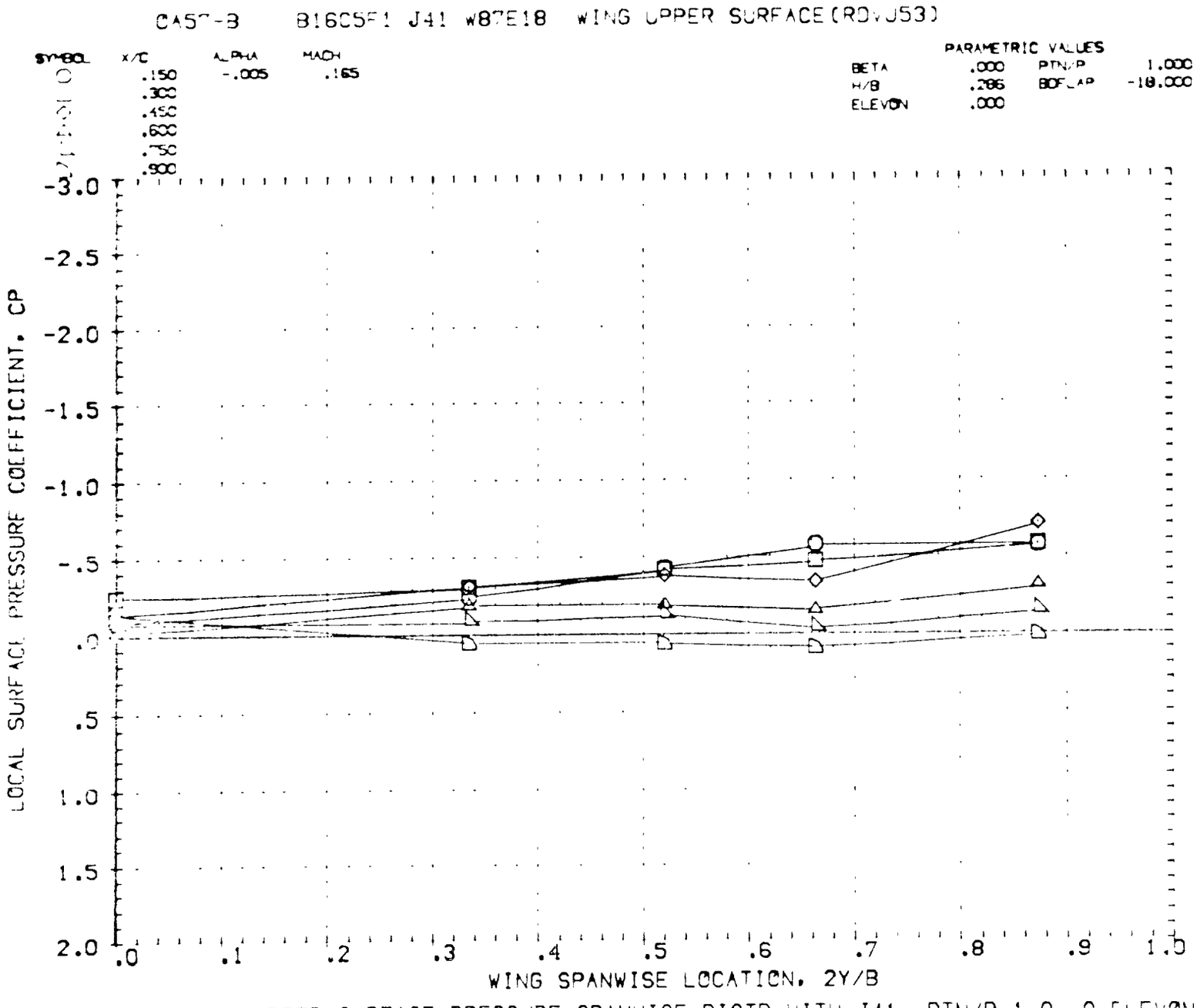


FIG 48 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

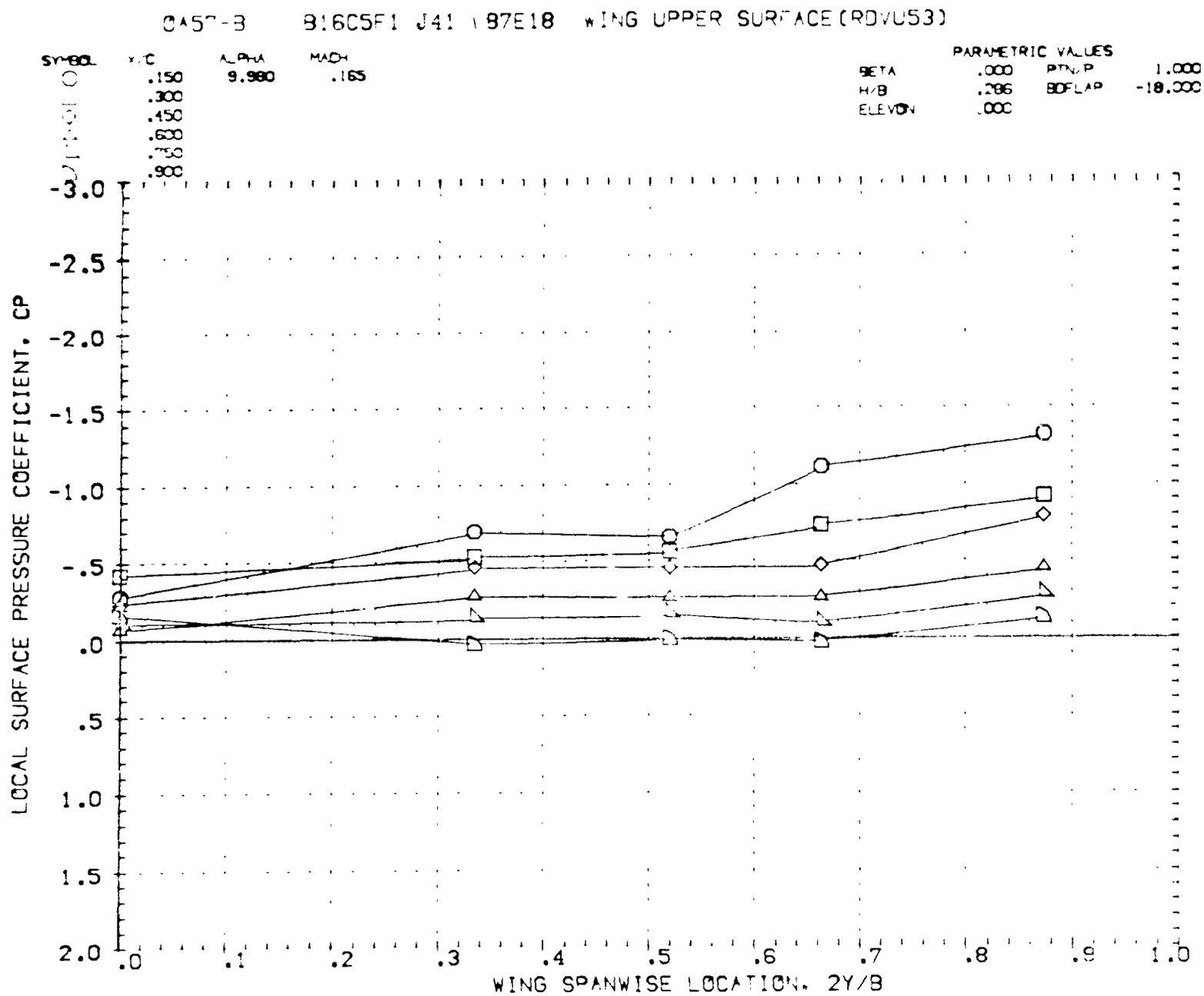


FIG 48 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

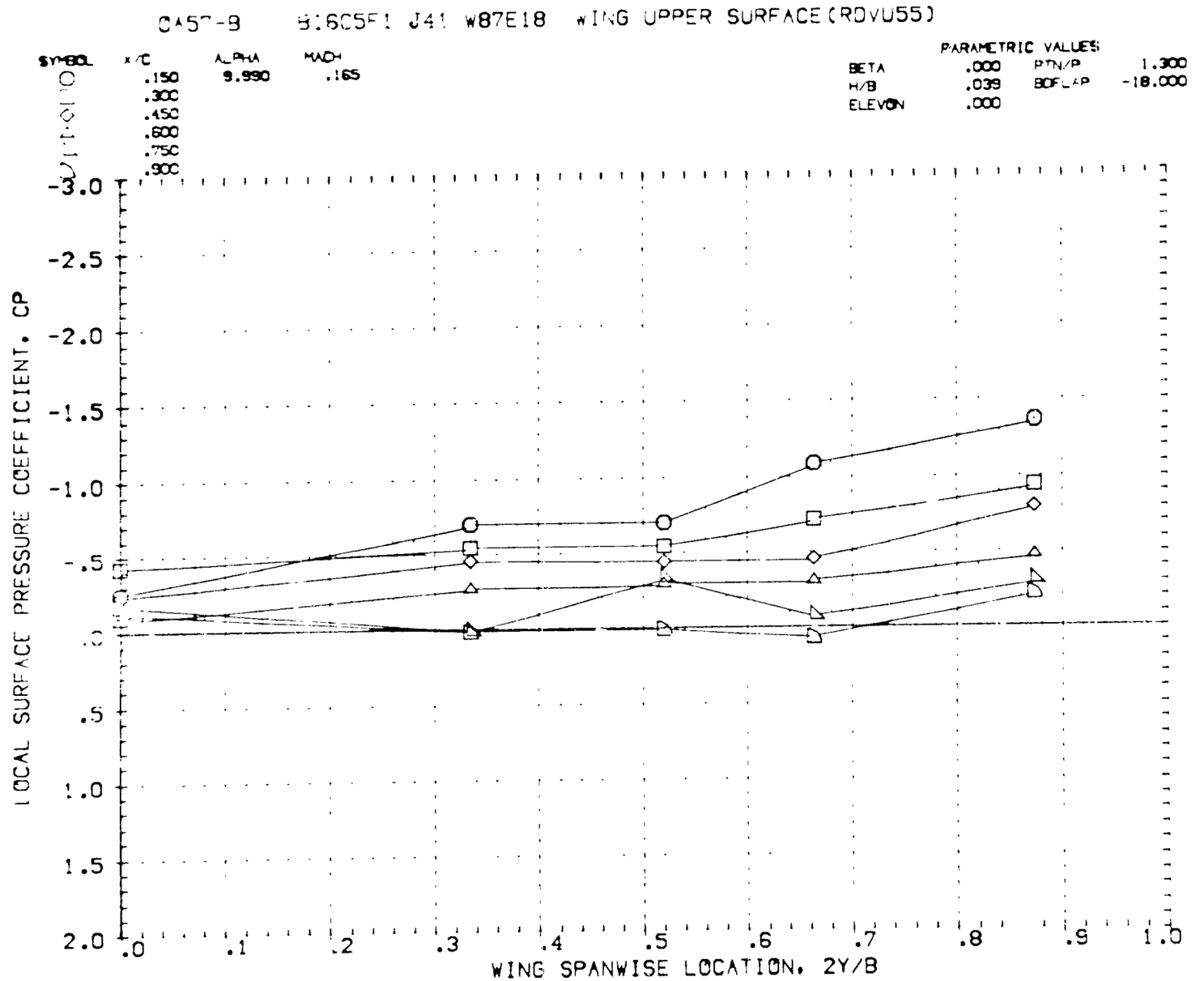


FIG 49 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVON

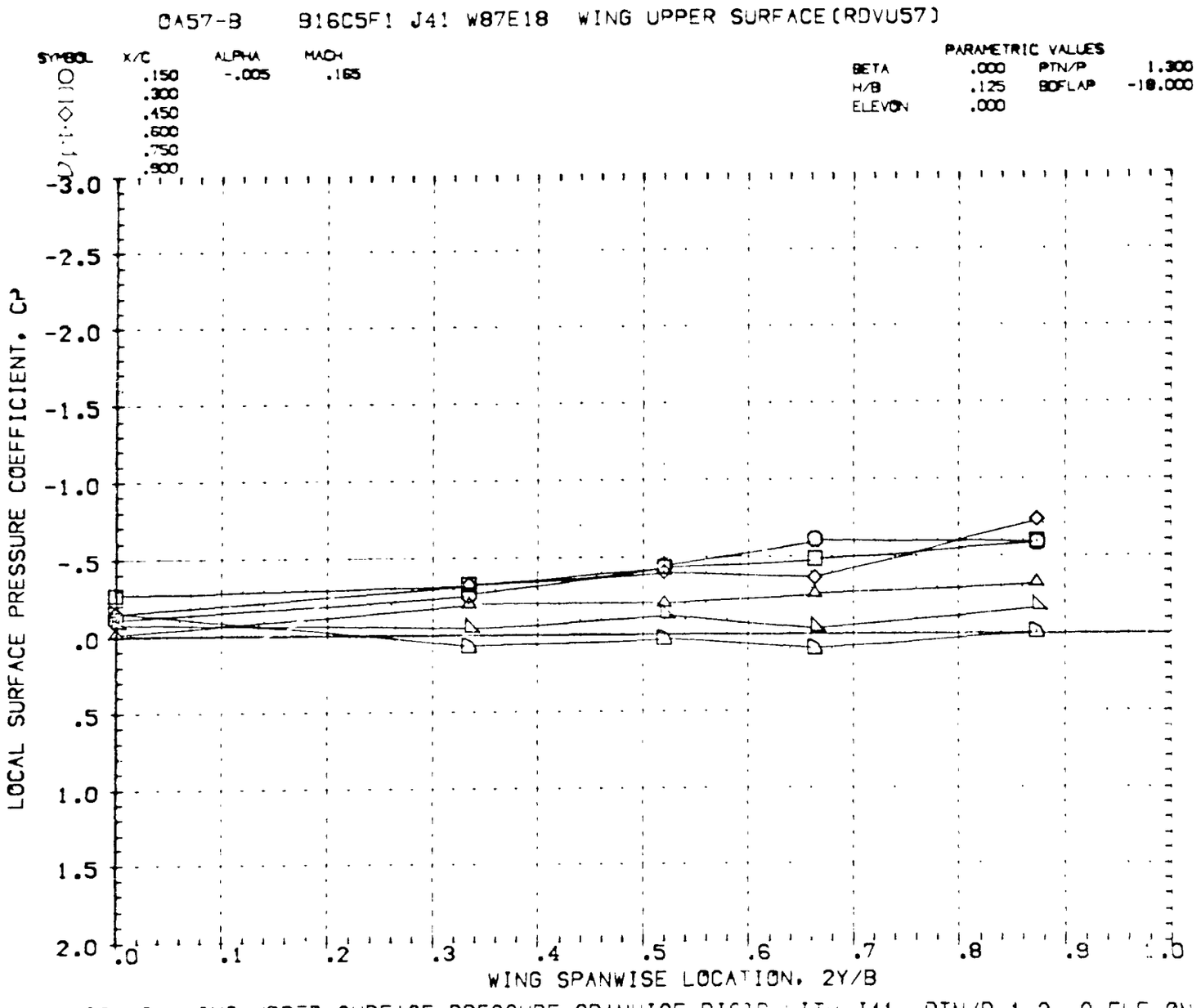


FIG 49 WING UPPER SURFACE PRESSURE SPANWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

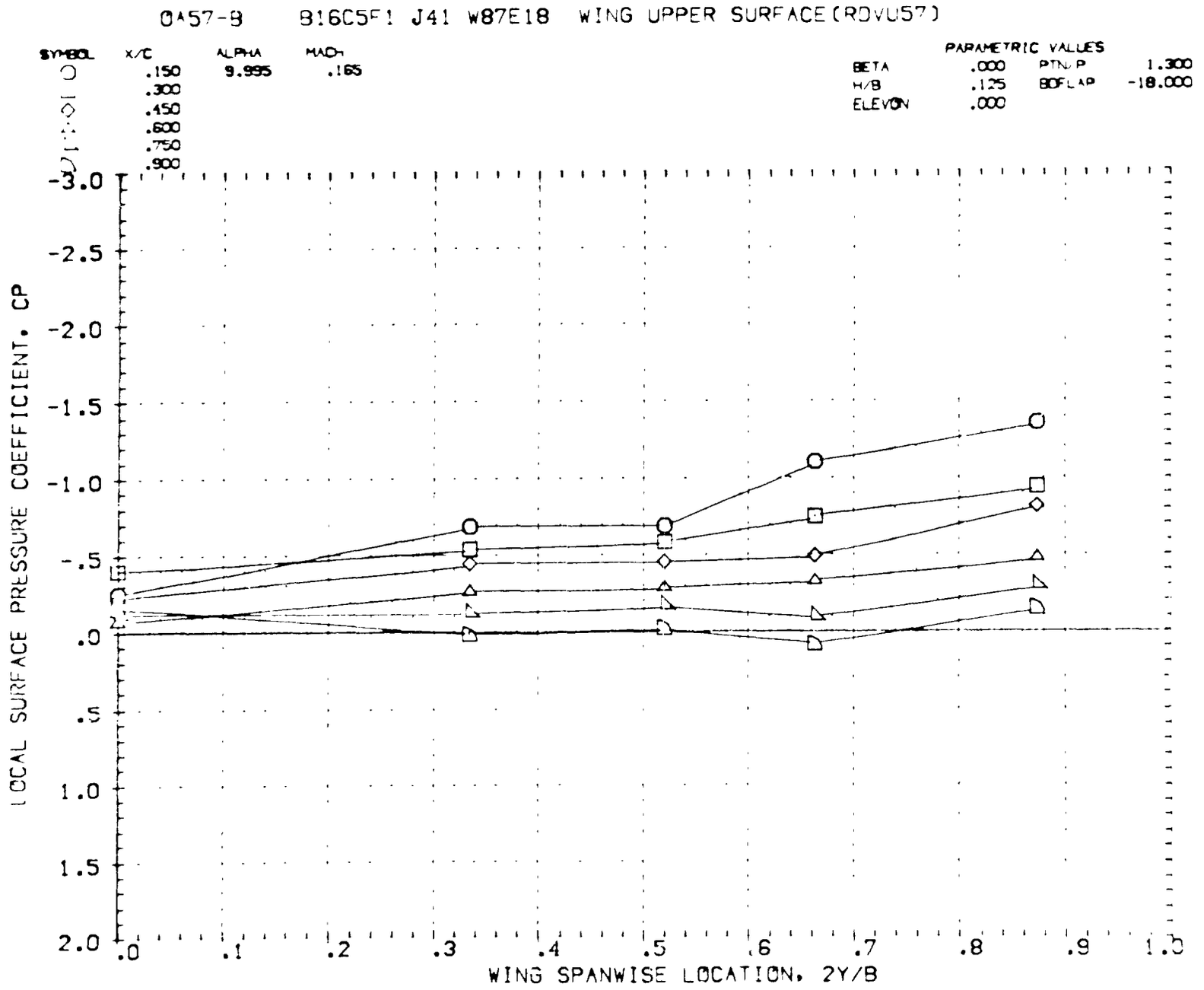


FIG 49 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVON

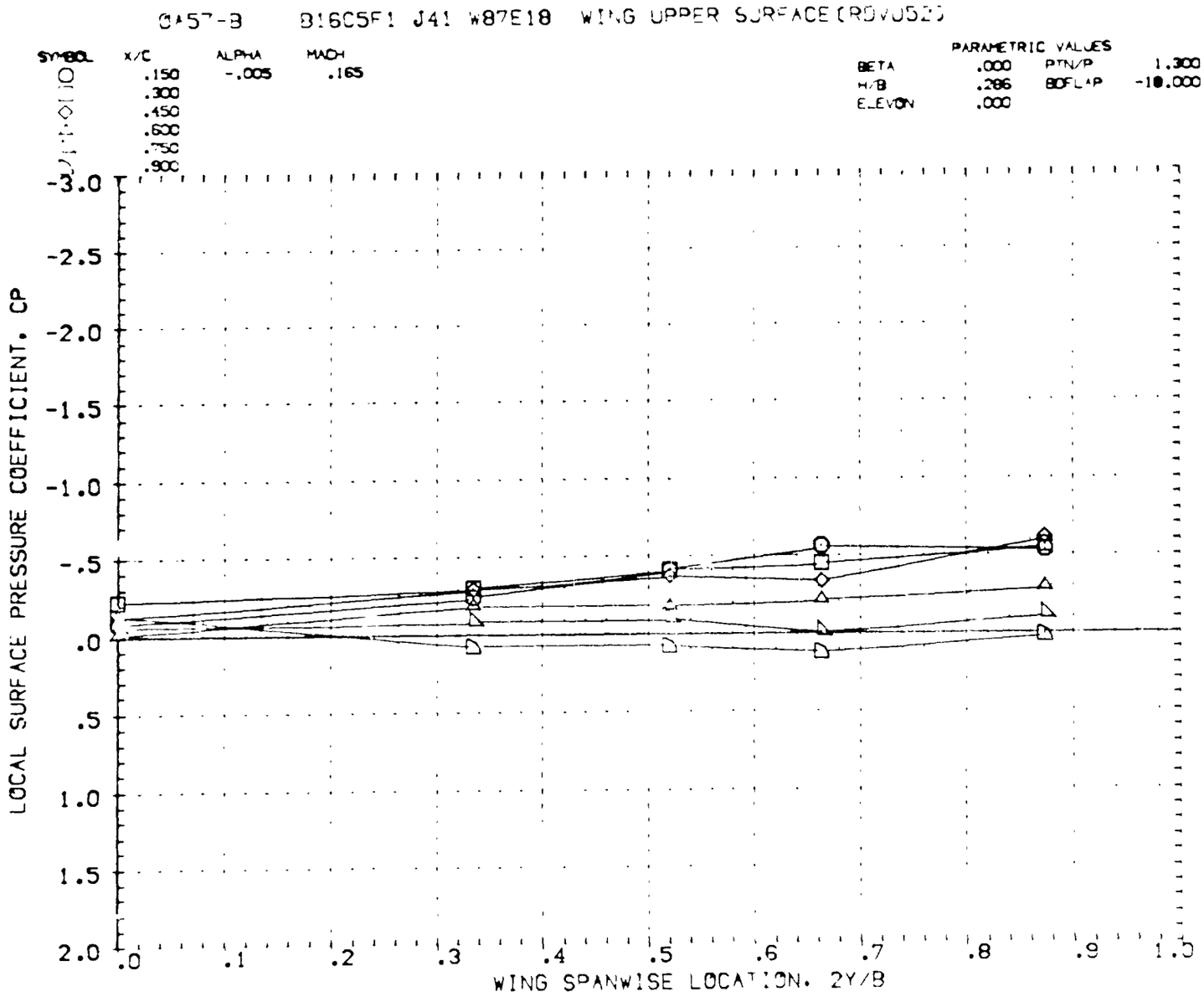


FIG 49 WING UPPER SURFACE PRESSURE SPANWISE DIST AT J41, PTN P=1.3, δ ELEVON

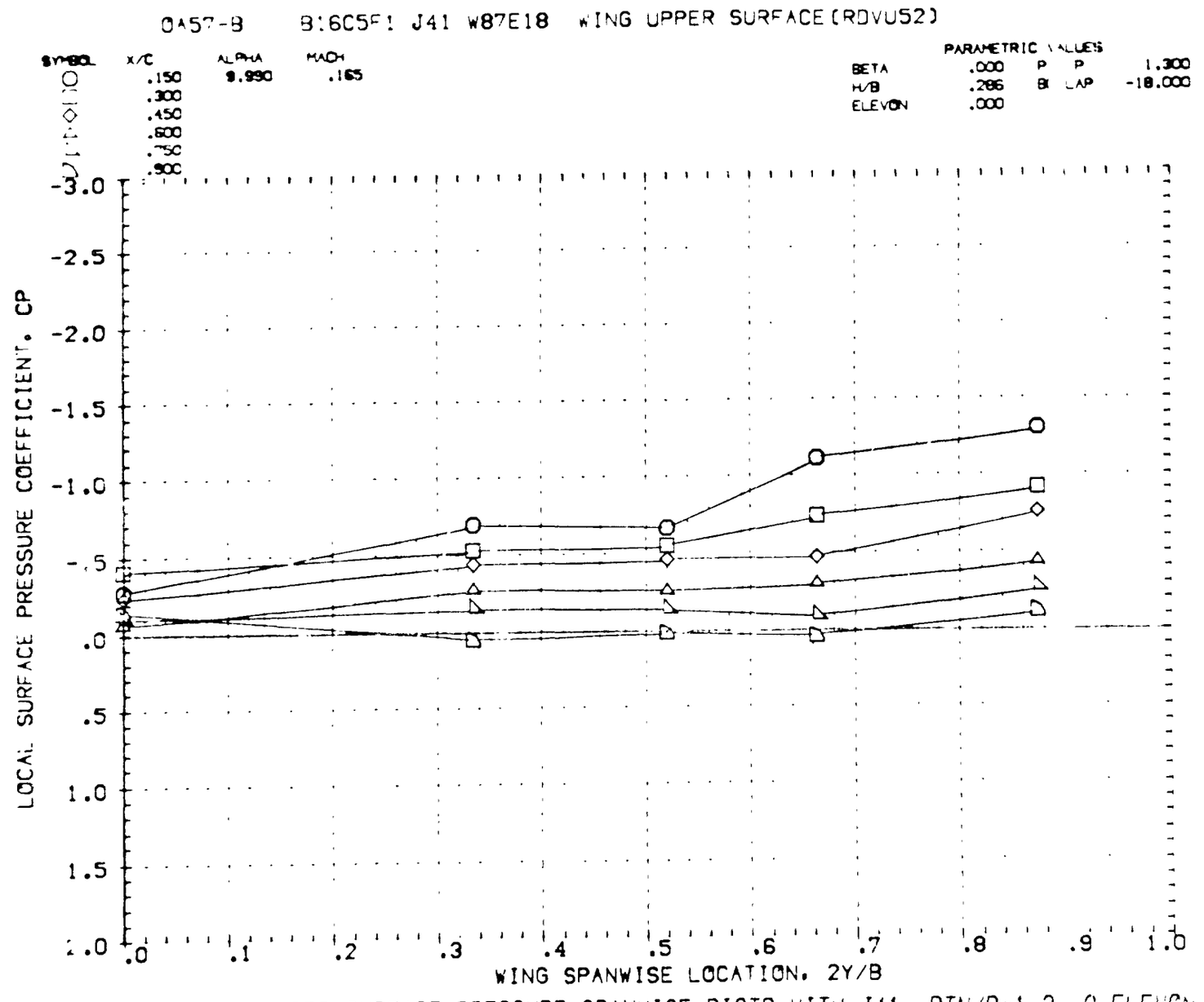


FIG 49 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3 0 ELEVON

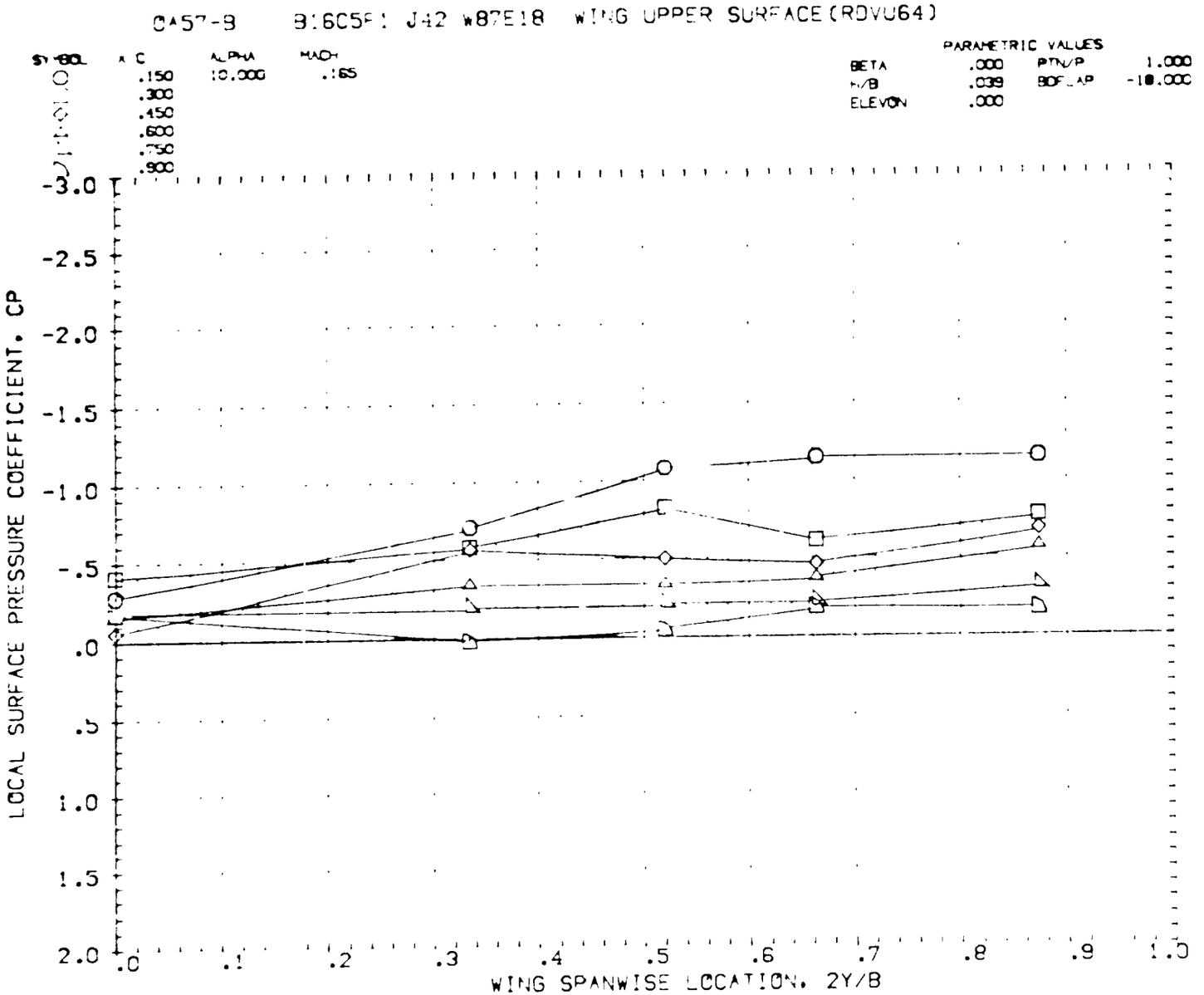


FIG 50 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42 PTN/P=1.0, 0 ELEVON

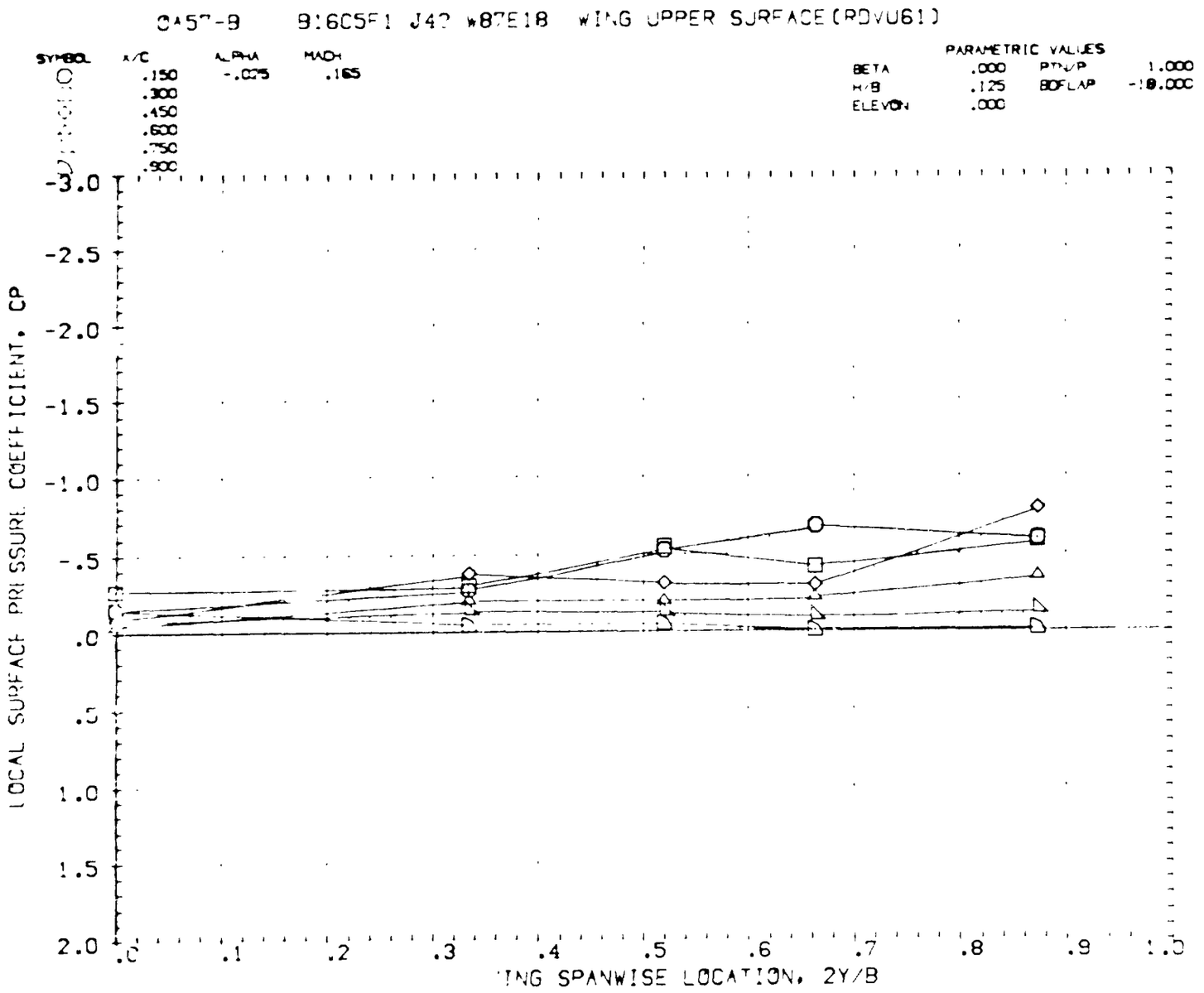


FIG 50 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

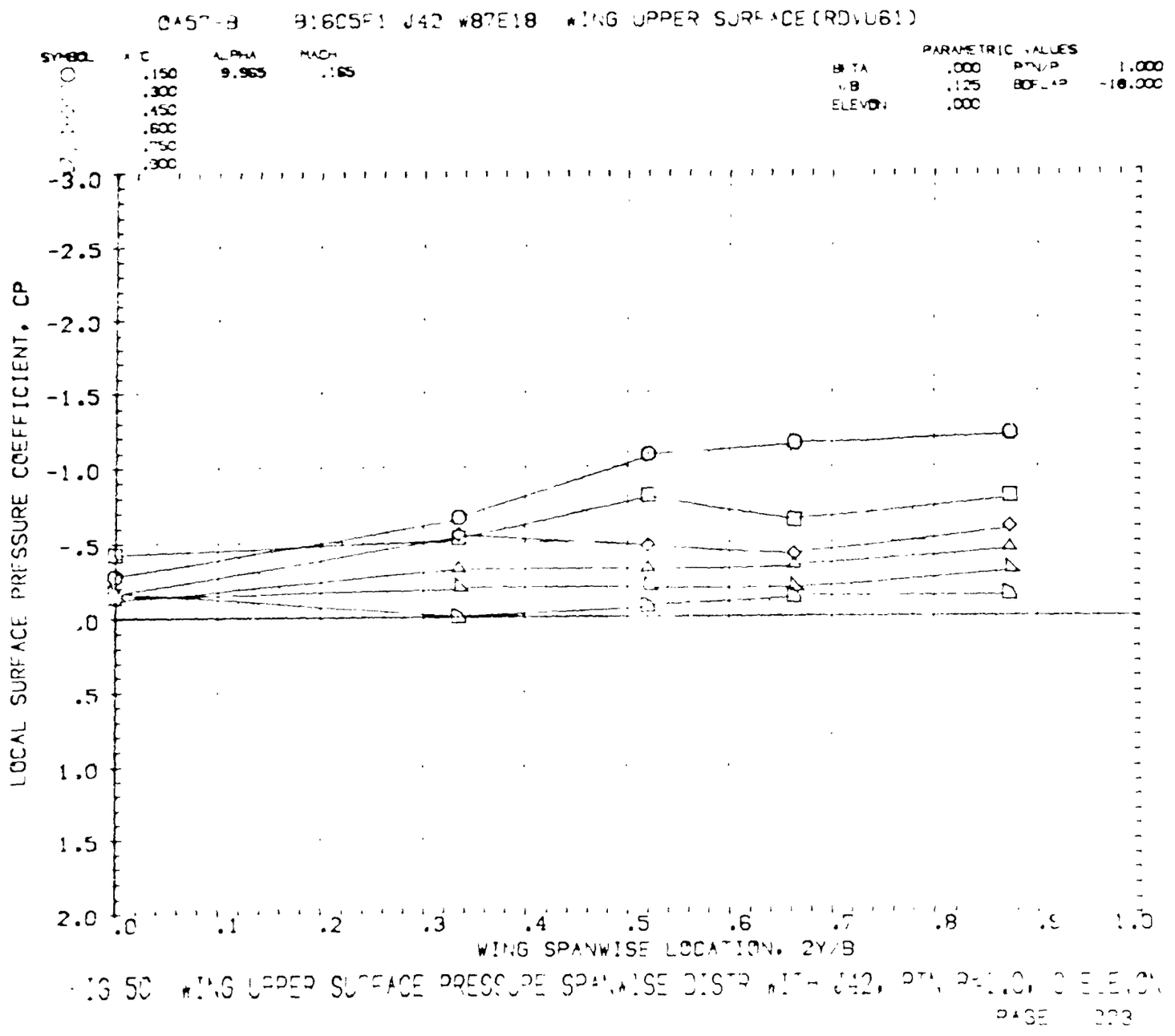


FIG 50 WING UPPER SURFACE PRESSURE SPANWISE DIST WITH J42, DTN/P=1.0, 0 ELEVON

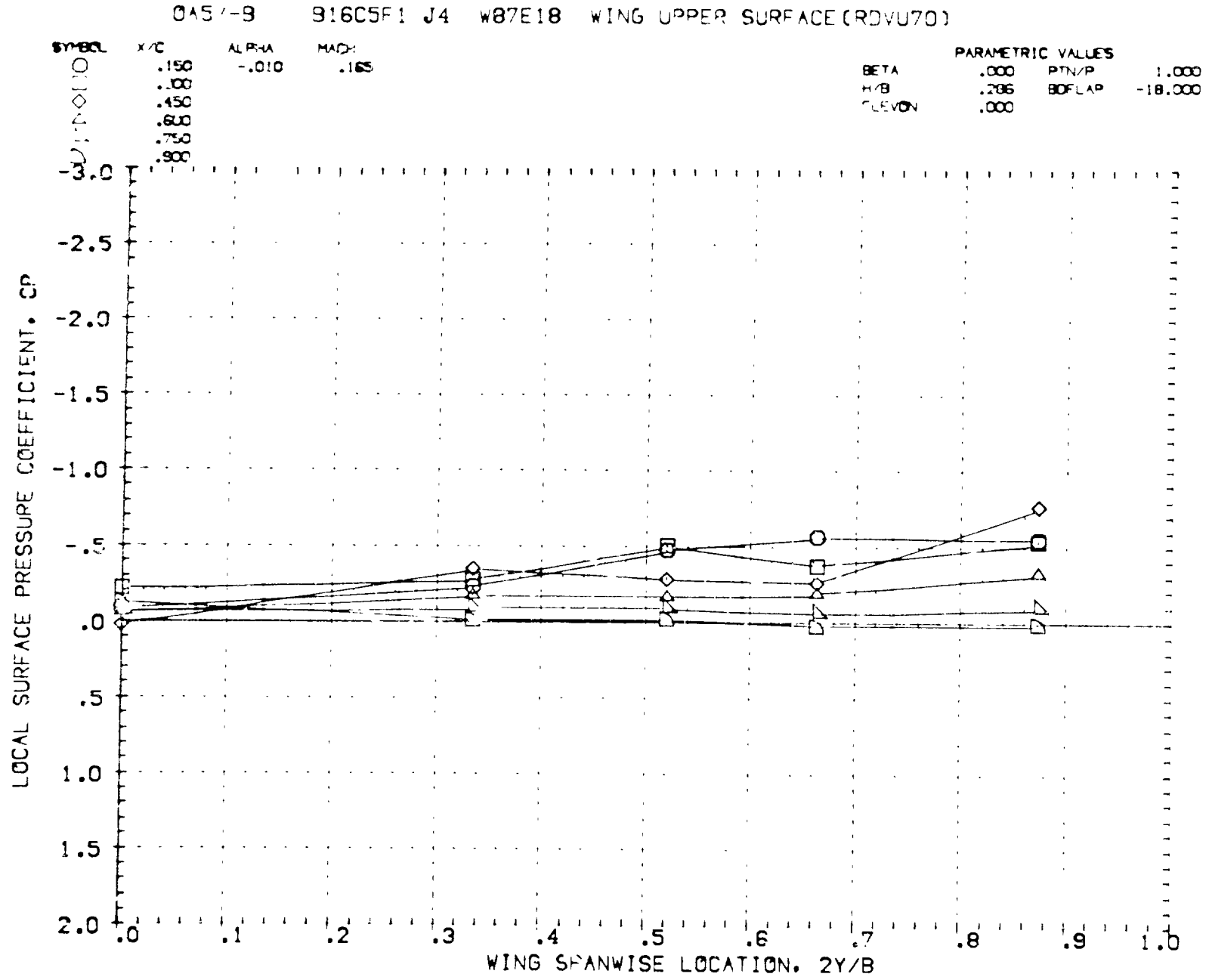


FIG 50 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

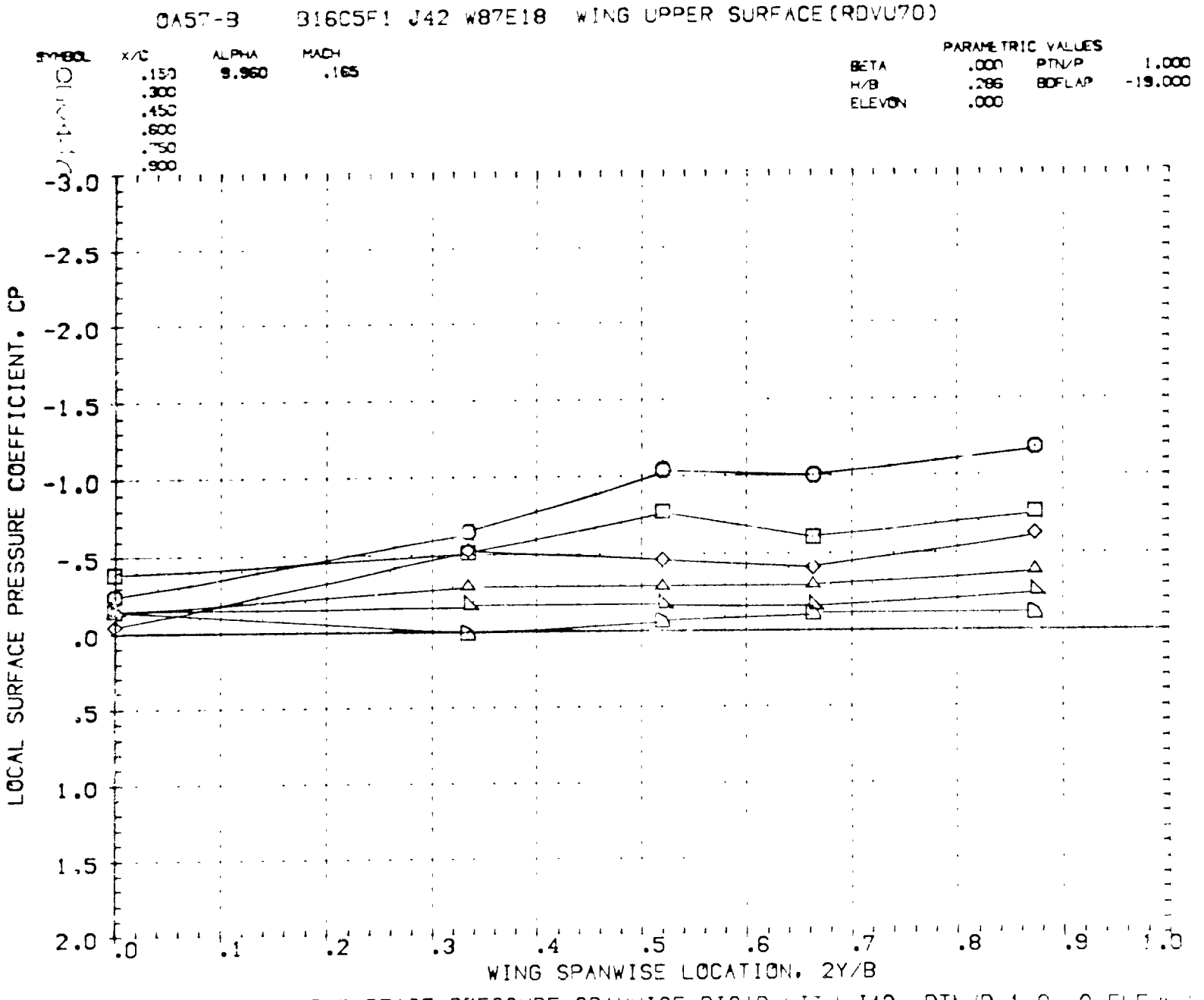


FIG 50 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

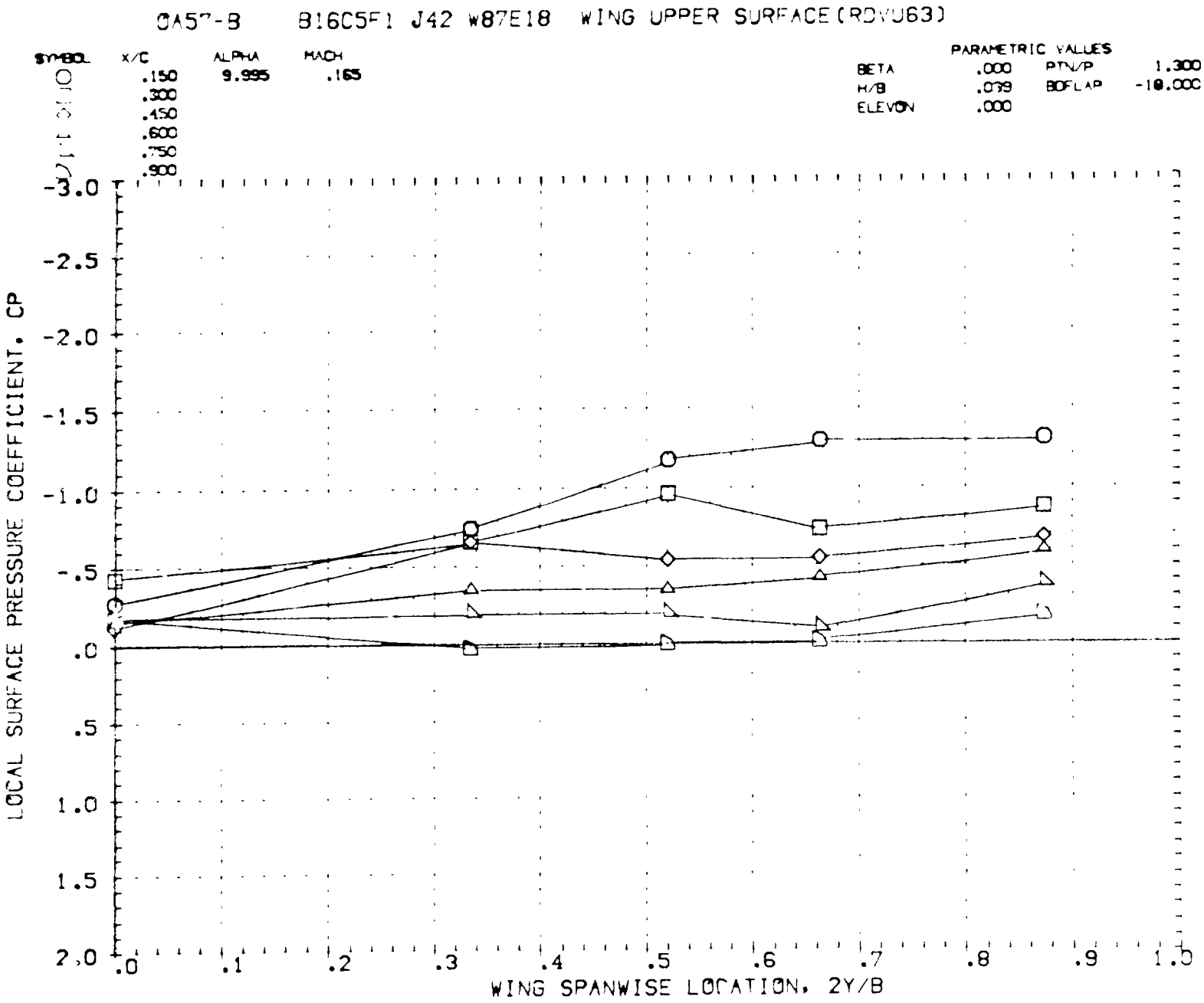


FIG 51 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

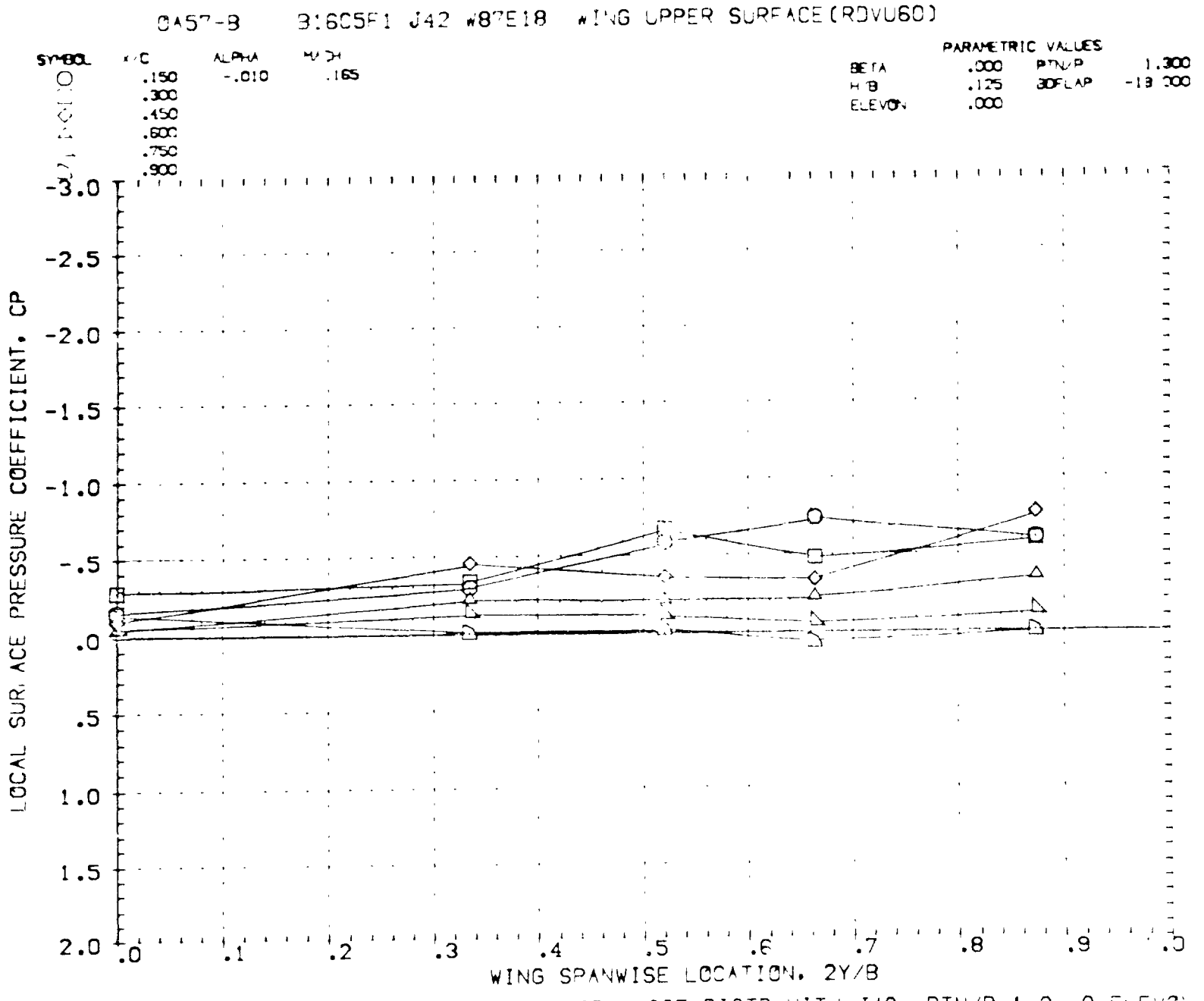


FIG 51 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

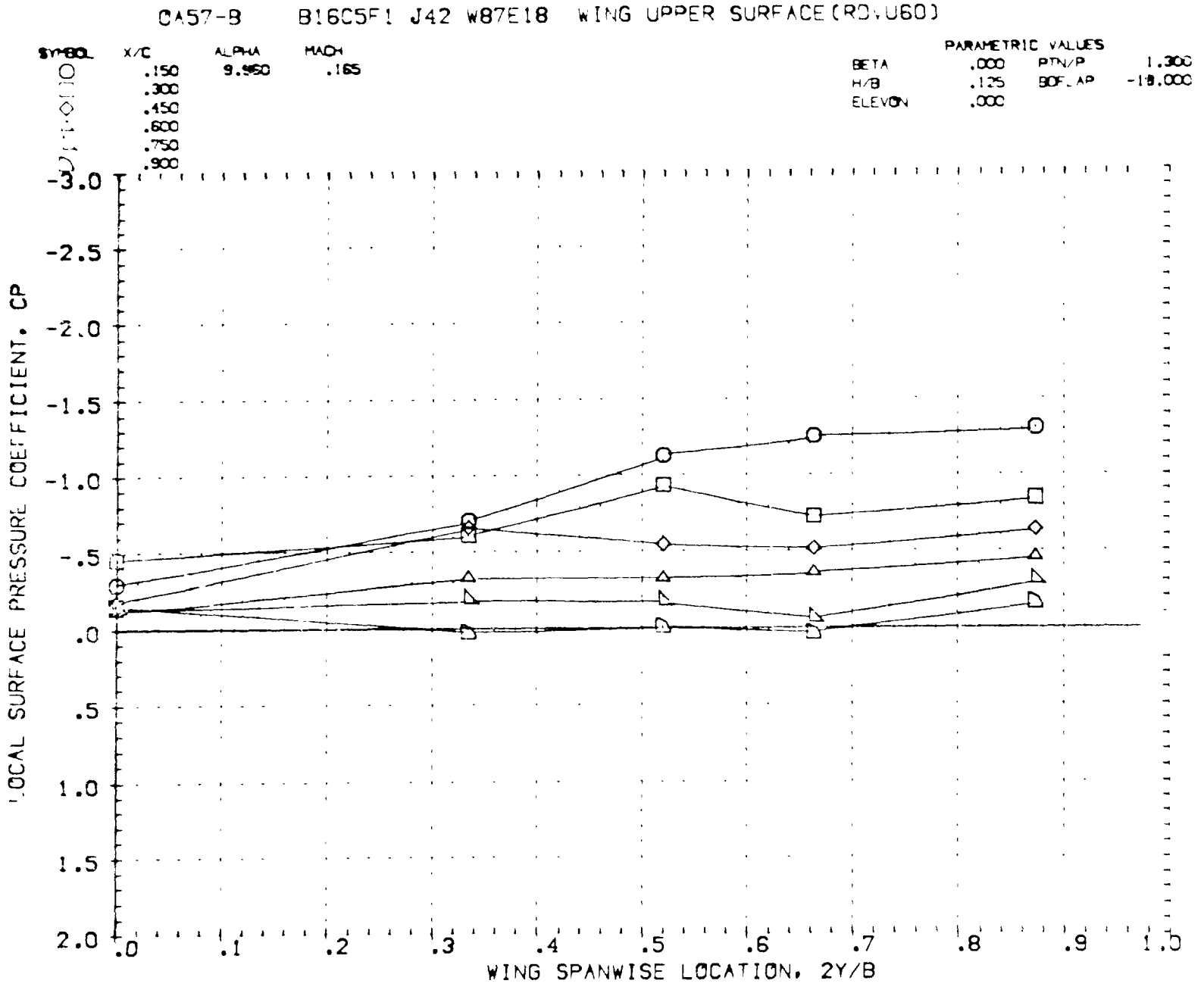


FIG 51 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

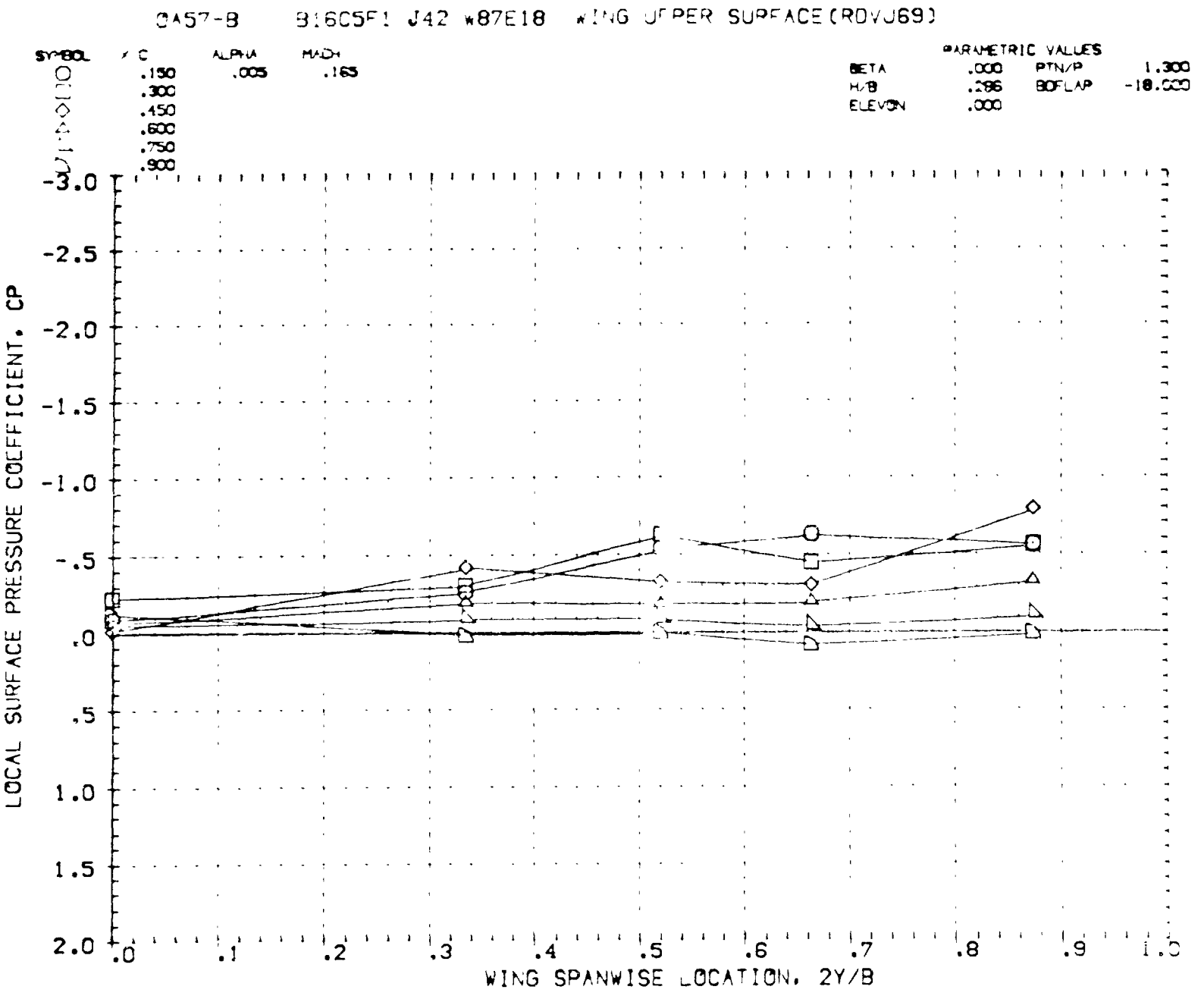


FIG 51 WING UPPER SURFACE PRESSURE SPANWISE DIST WITH J42, PTN/P=1.3, O

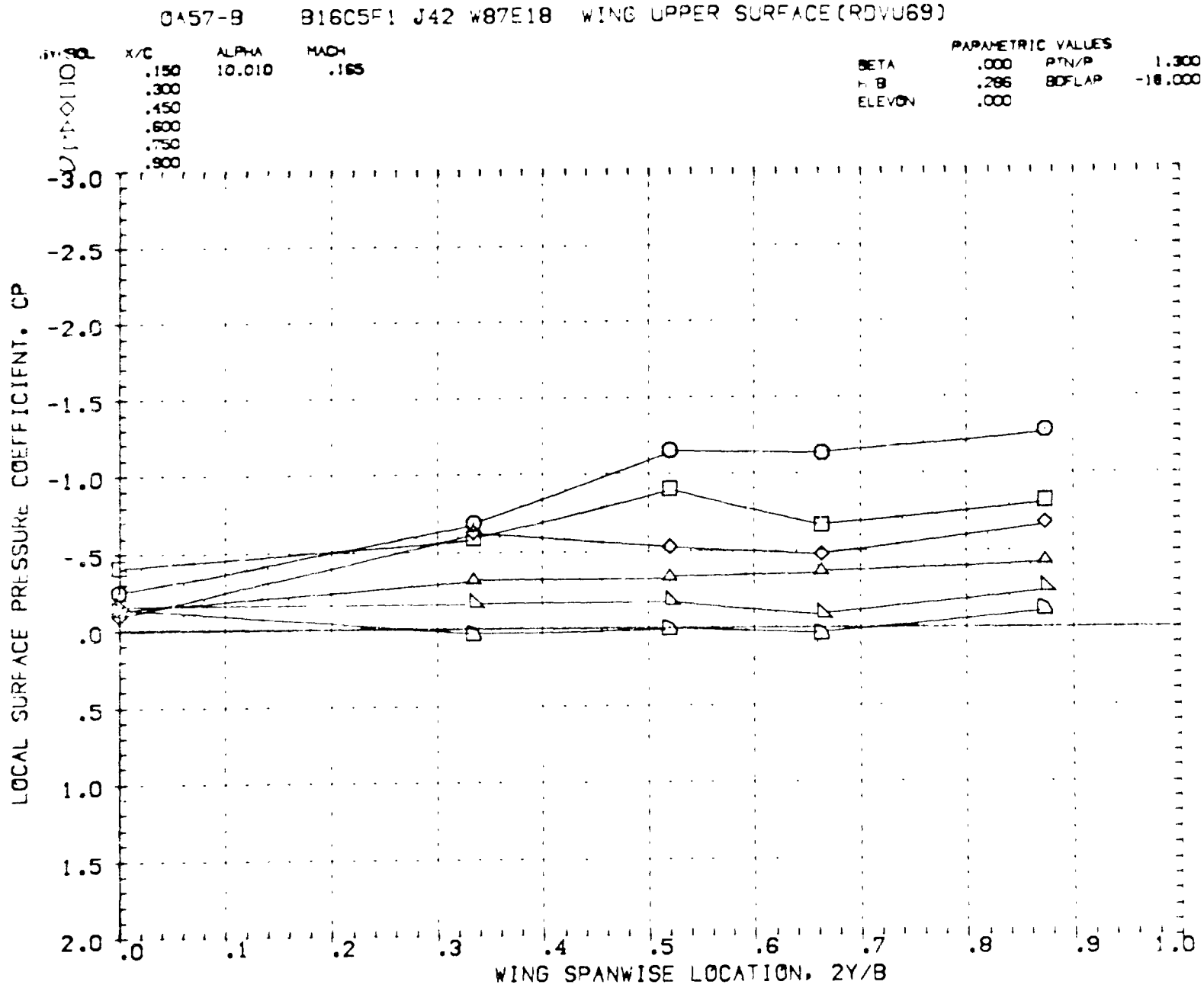


FIG 51 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

CASE-B B16C5F1 J42 W87E18 WING UPPER SURFACE (RDVU62)

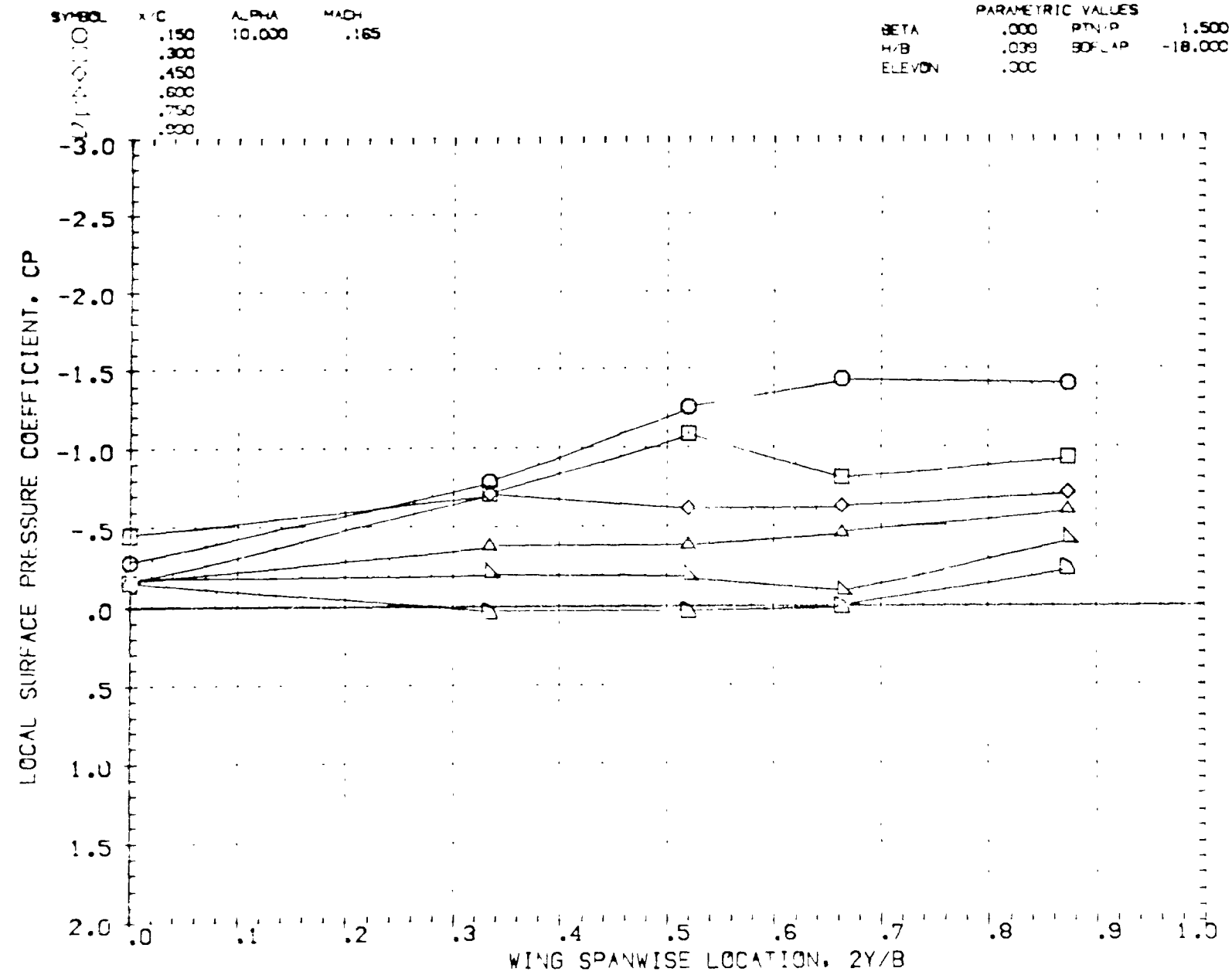


FIG 52 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

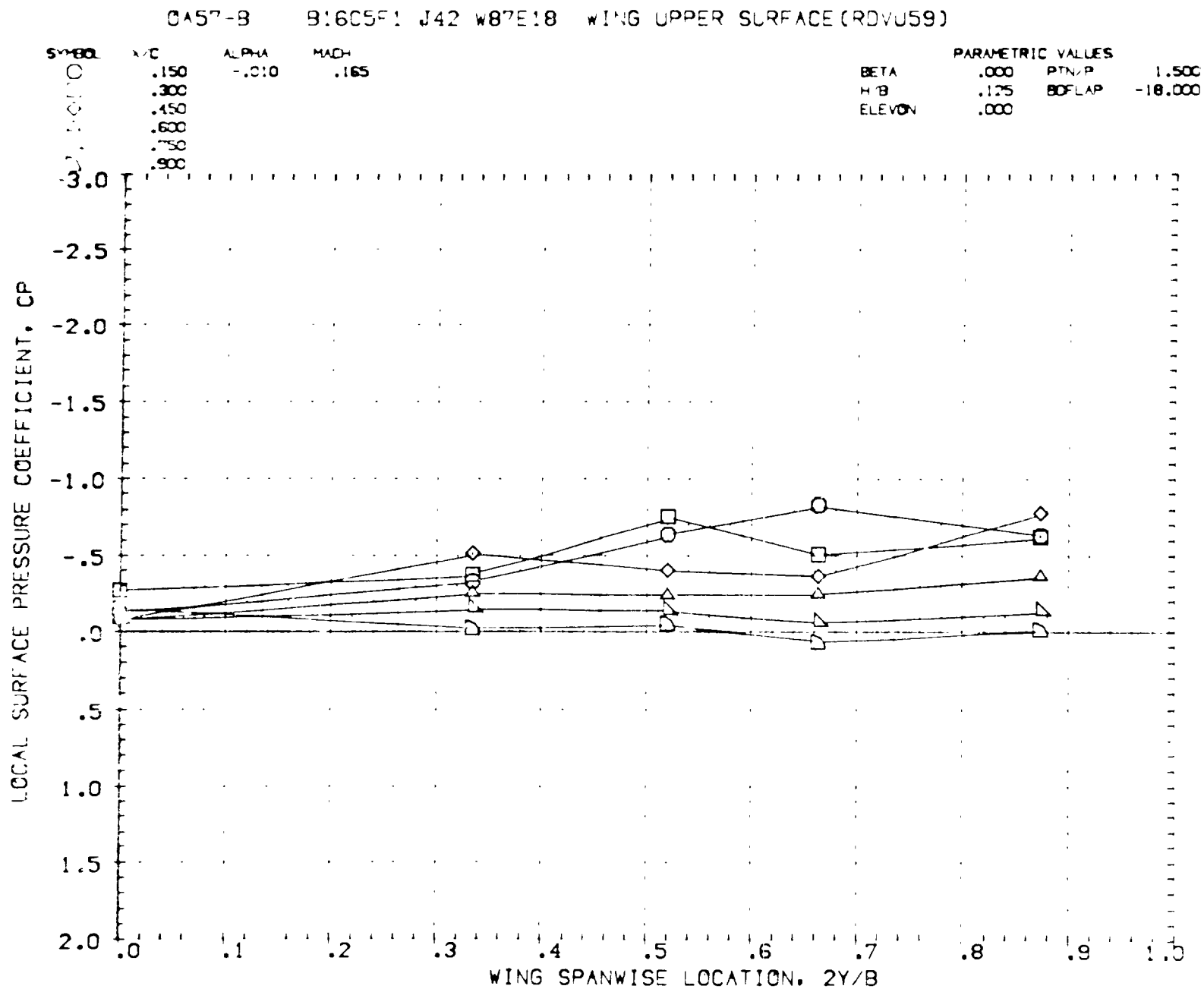


FIG 52 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

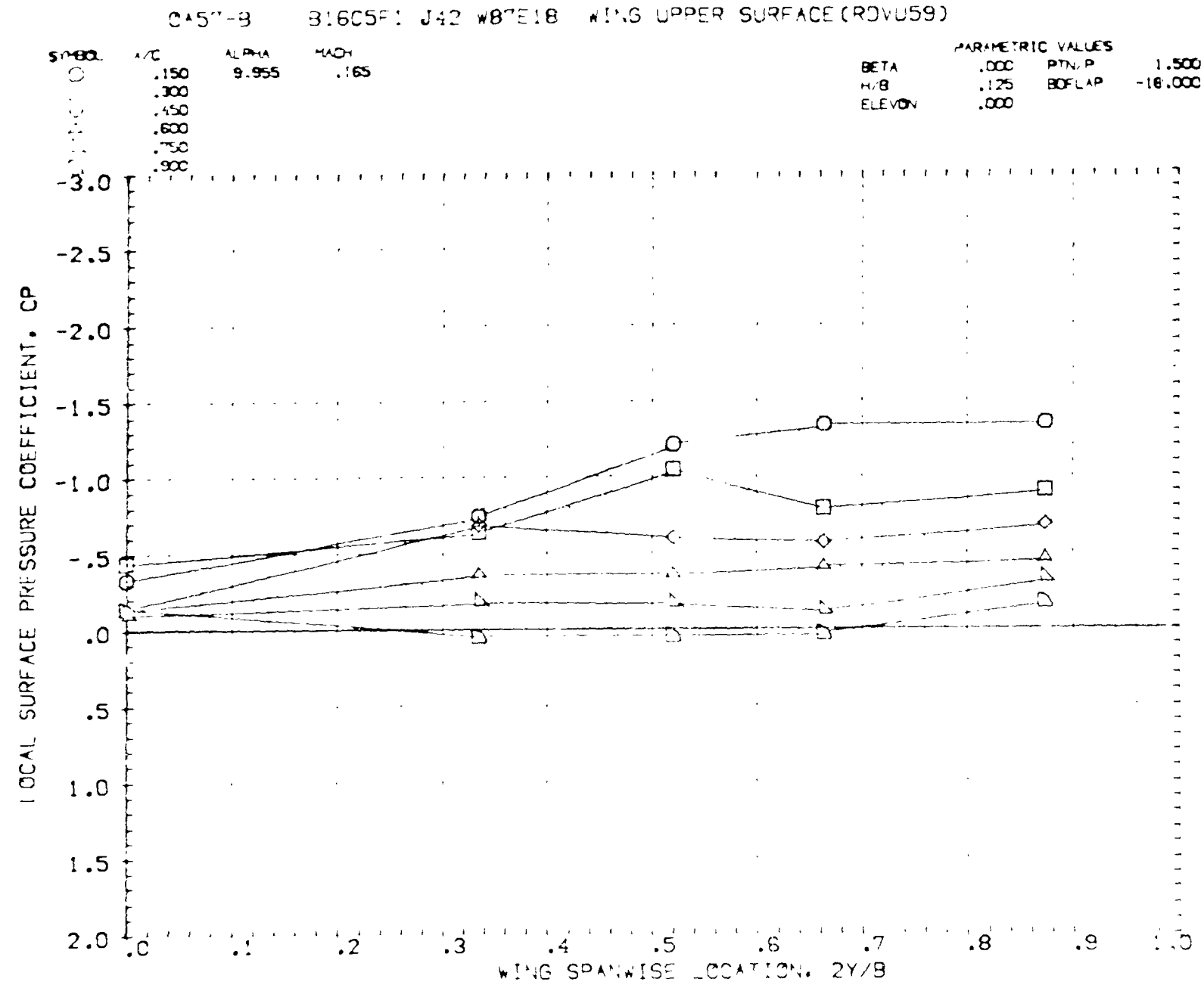


FIG 52 WING UPPER SURFACE PRESSURE SPANWISE DISTR A/C J42, PTN/P=1.5, 0 ELEVON

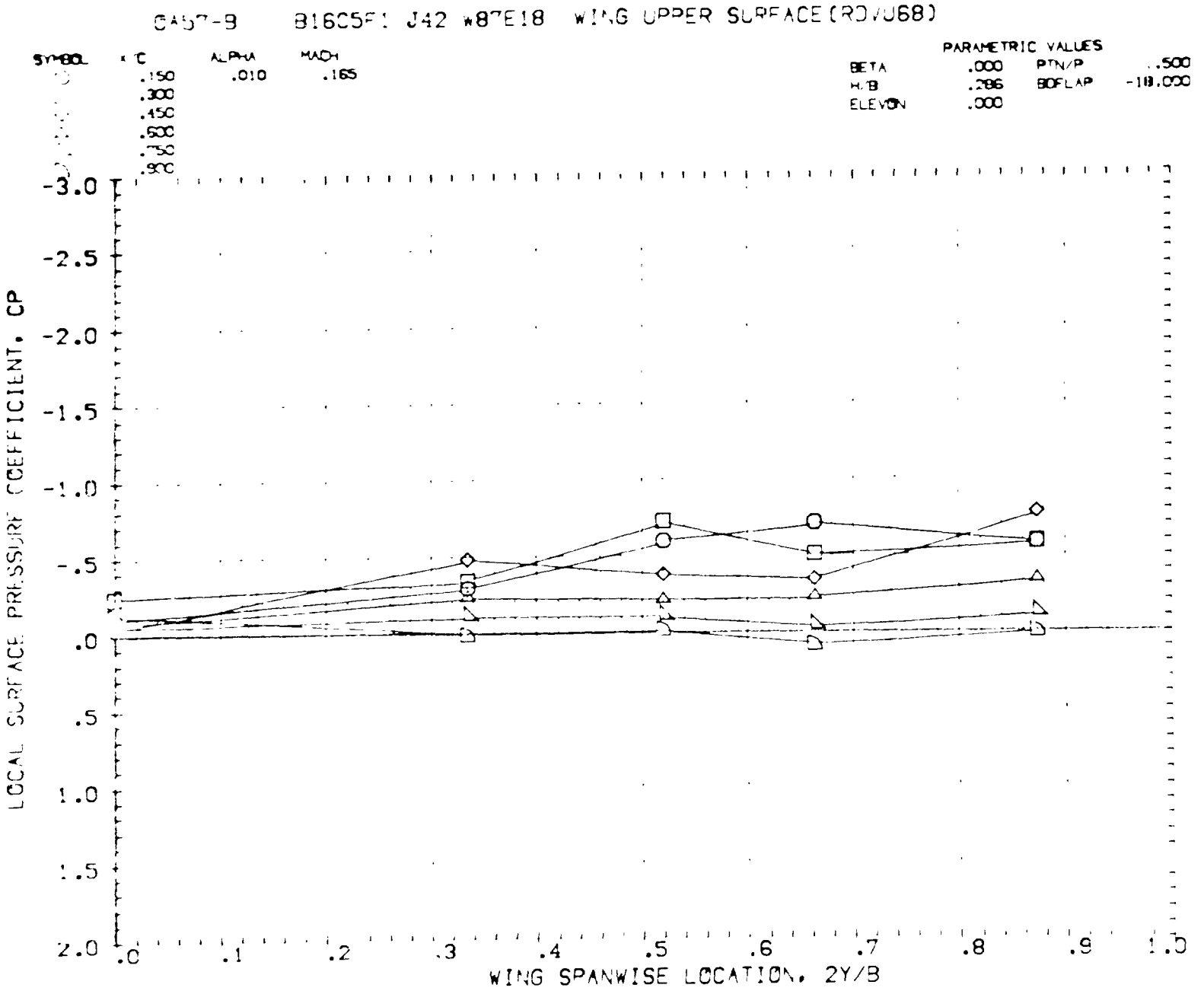


FIG 52 WING UPPER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

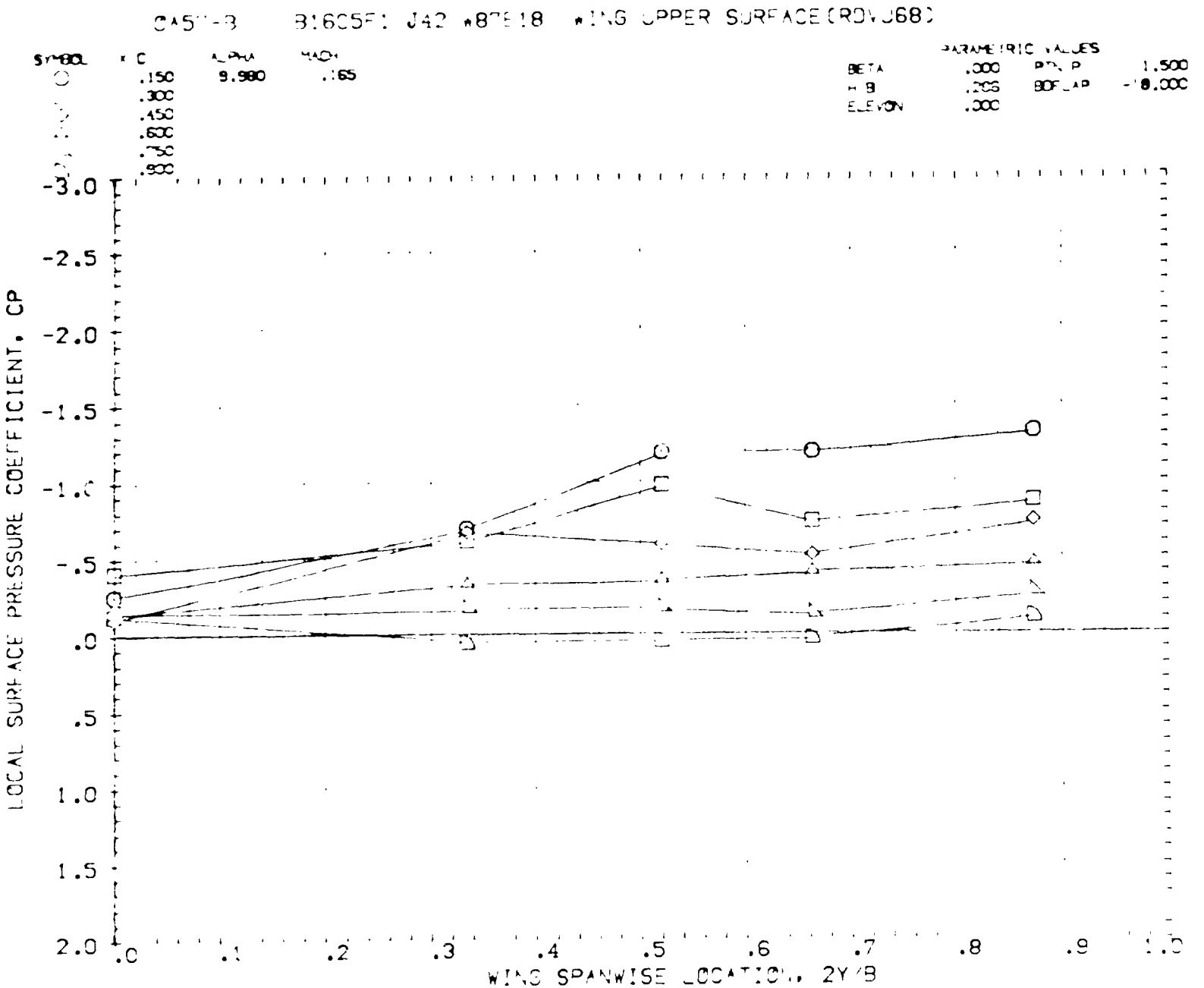


FIG 52 *ING UPPER SURFACE PRESSURE SPANWISE DISTR A[illegible] J42, PTN P=1.5, 0 ELEVON

PAGE [illegible]

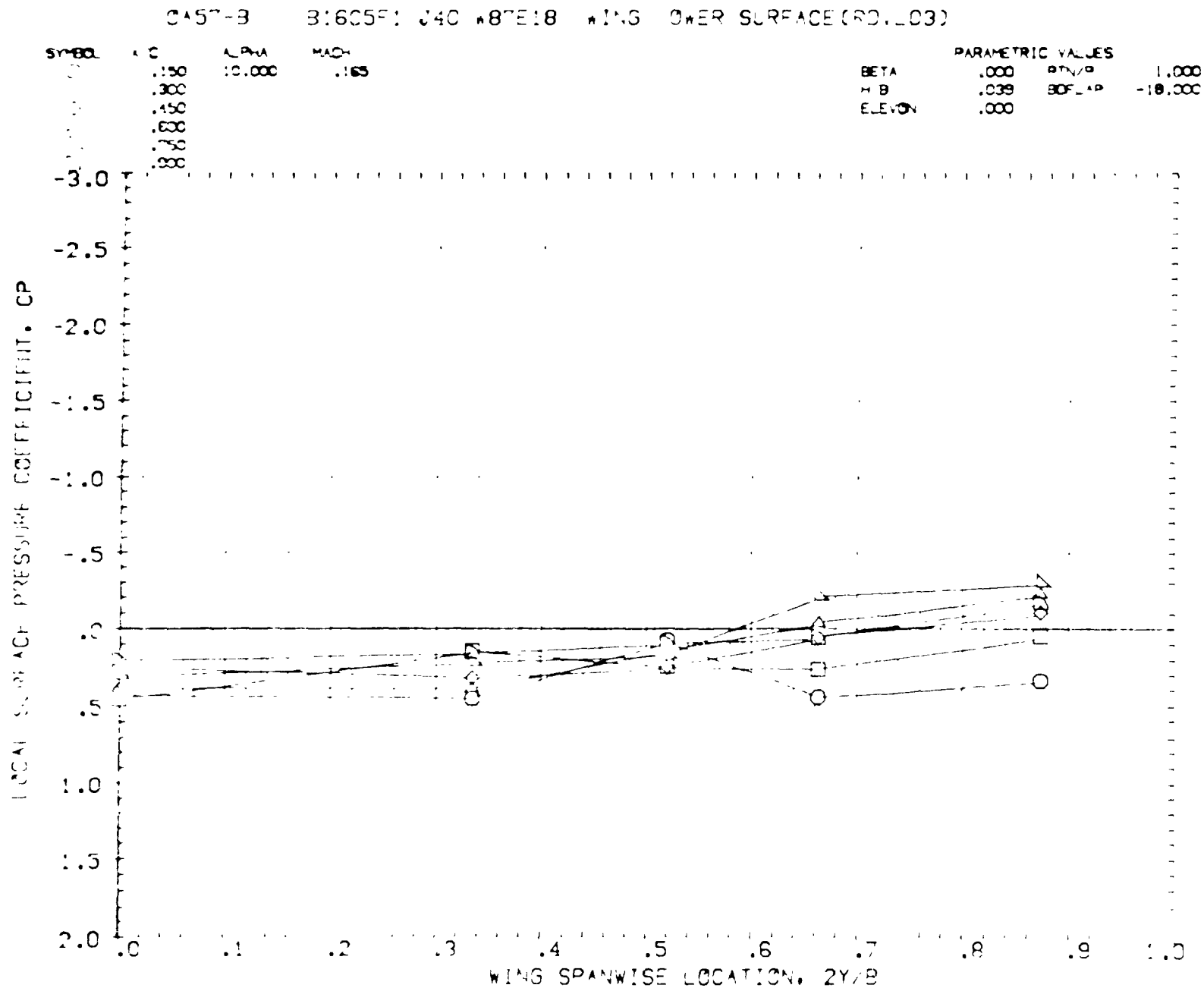


FIG 50 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, BTN/B=1.0, 0 ELEVON

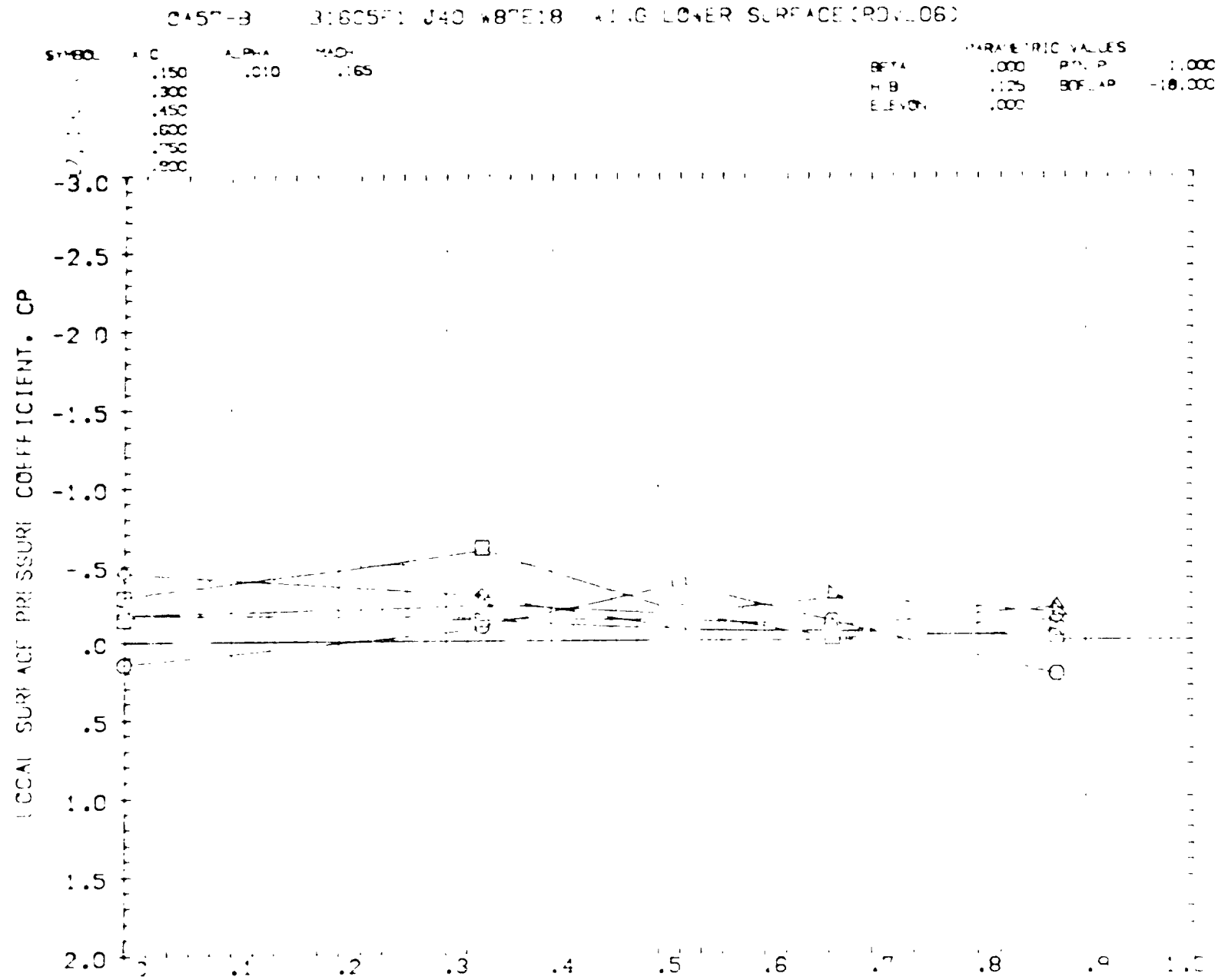

C457-B 31605F1 J40 *87E18 *WING LOWER SURFACE(ROV106)
SYMBOL
ALPHA
MACH
.150
.300
.450
.600
.750
.900
.010
.165
PARAMETRIC VALUES
BETA .000
ELEVON .000
BOFLAP -10.000
-3.0
-2.5
-2.0
-1.5
-1.0
-.5
.0
.5
1.0
1.5
2.0
LOCAL SURFACE PRESSURE COEFFICIENT, CP
.1
.2
.3
.4
.5
.6
.8
WING SPANWISE LOCATION, 2Y/B

FIG 53 WING [illegible]

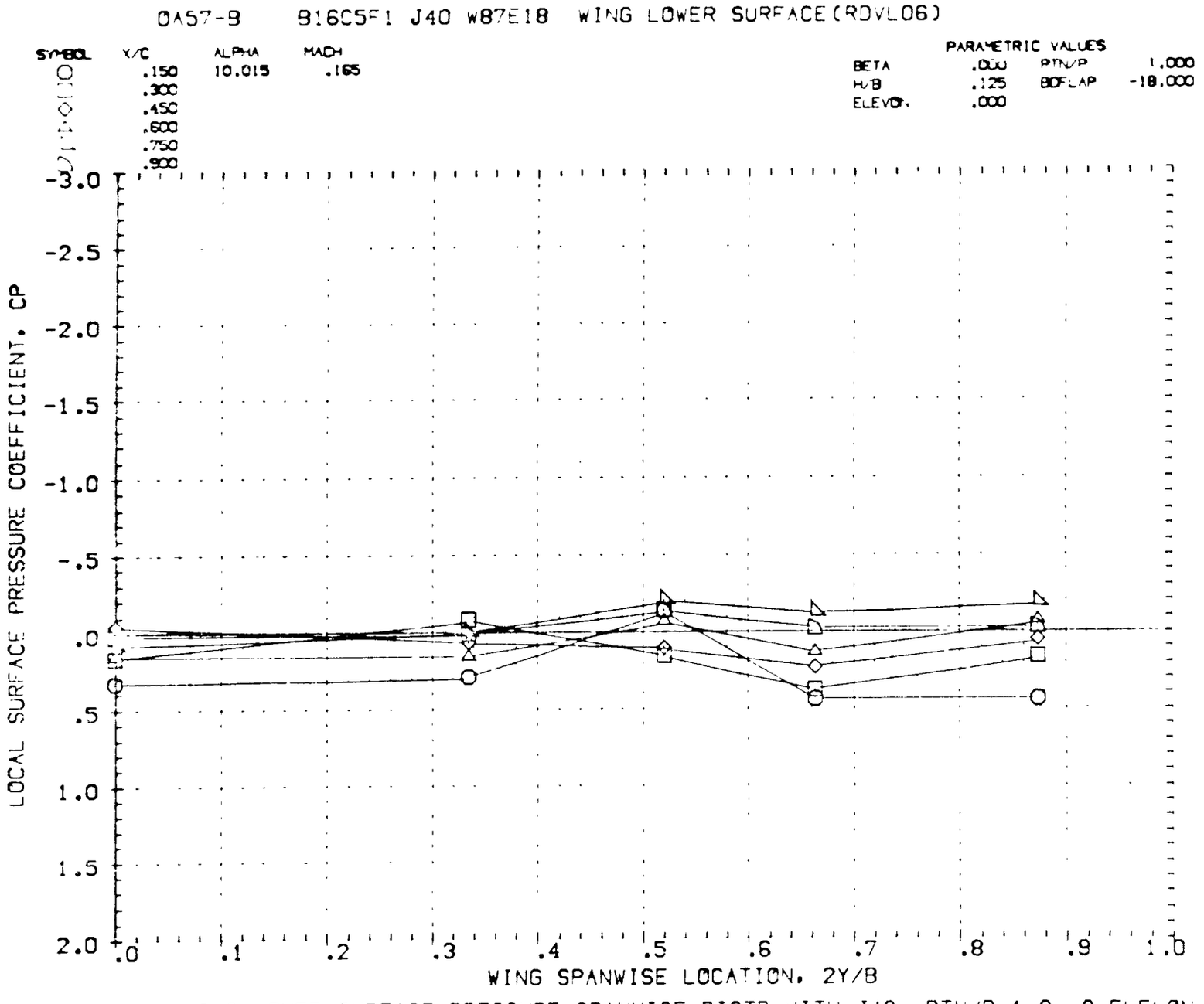


FIG 53 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

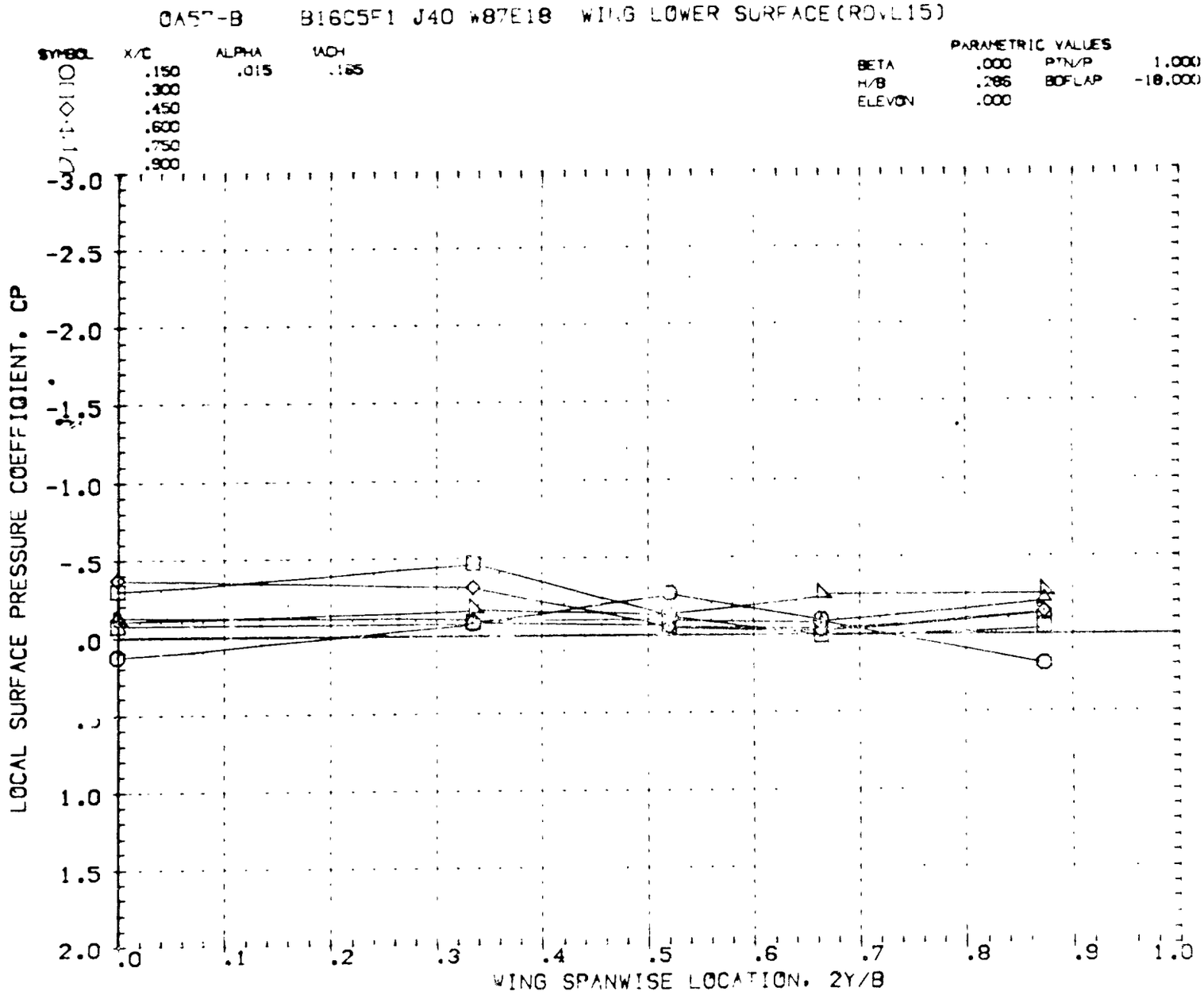


FIG 53 WING LOWER SURFACE PRESSURE SPANWISE [illegible] J40, PTN/P=1.0 [illegible]

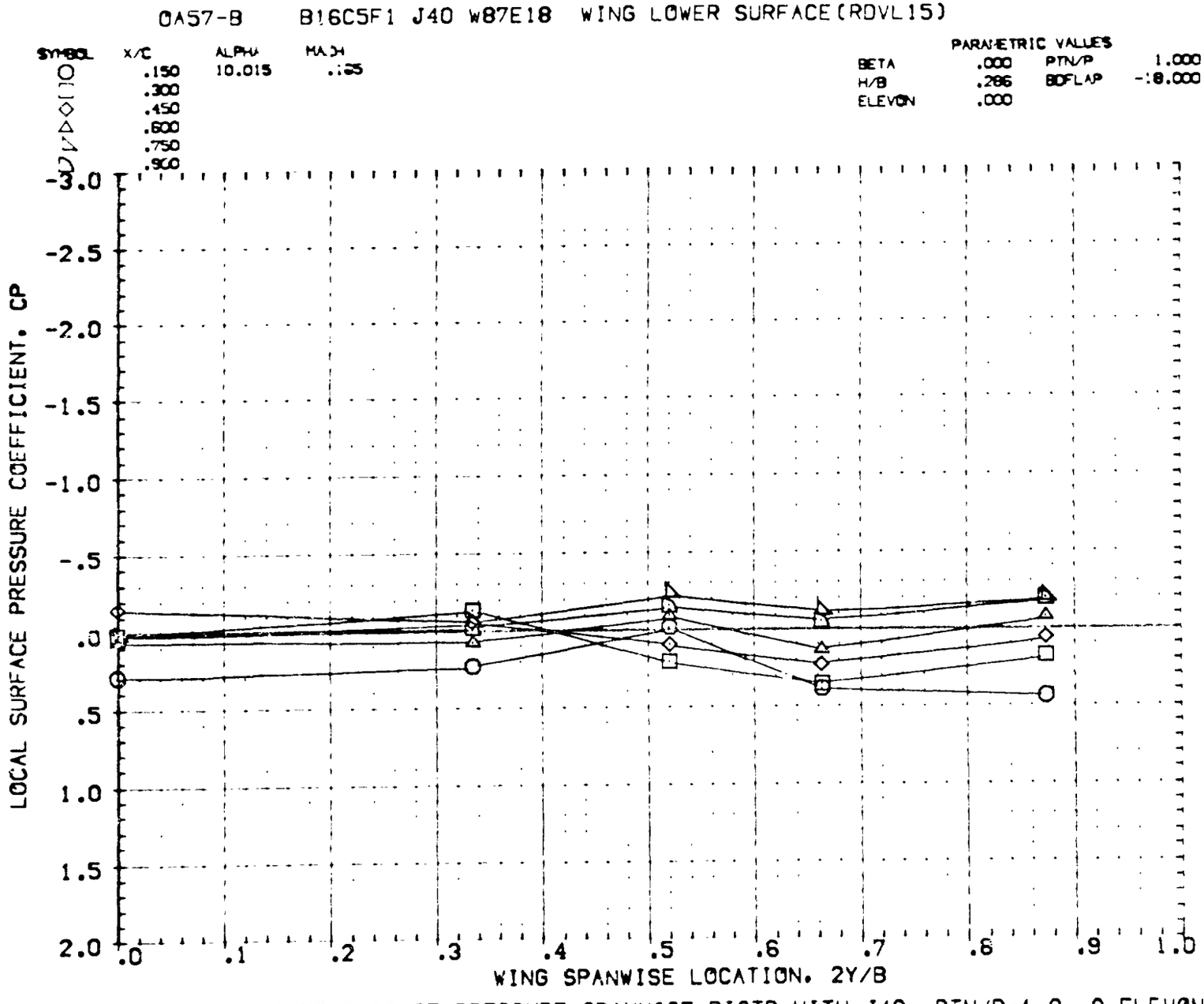


FIG 53 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 0 ELEVON

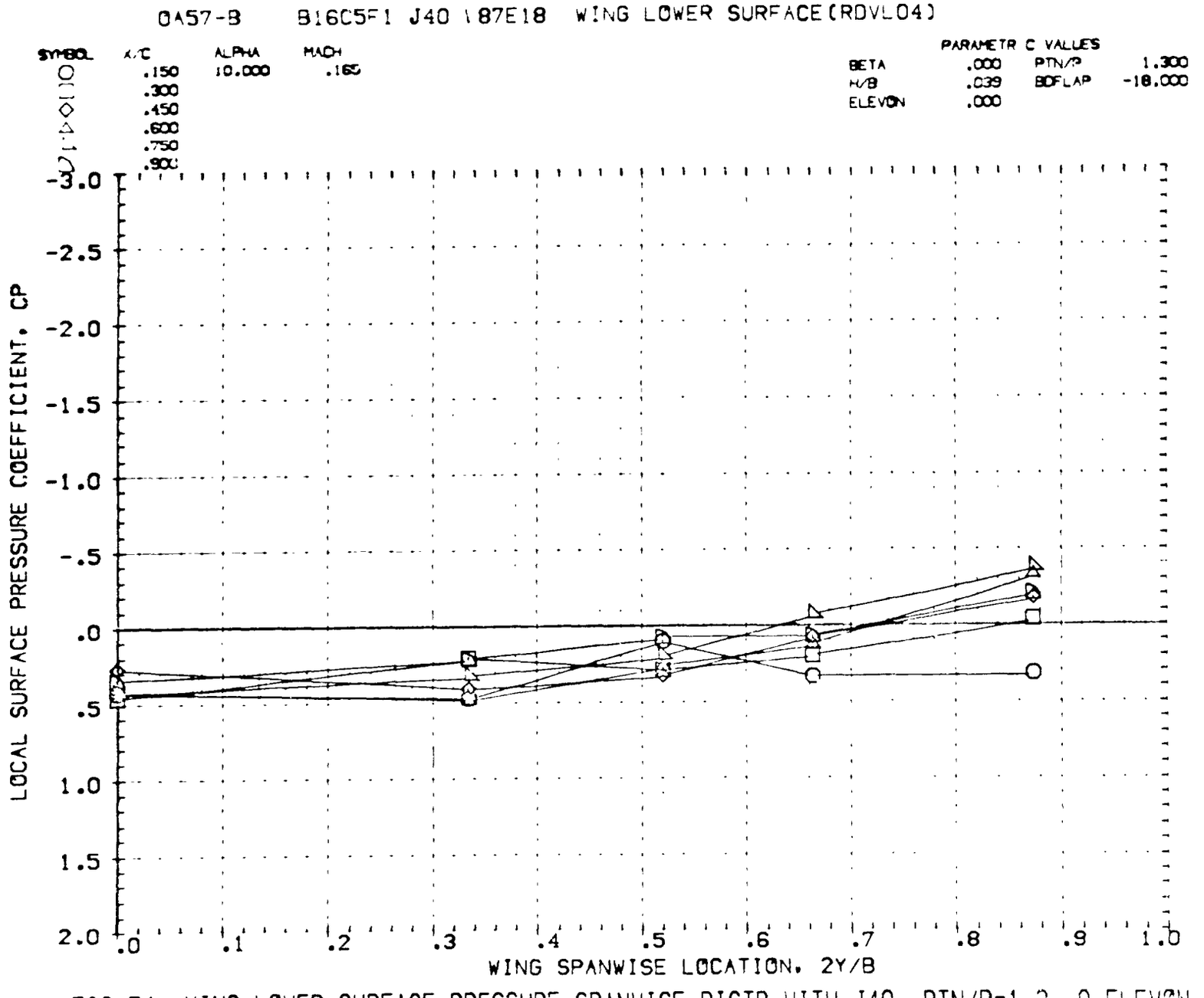


FIG 54 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

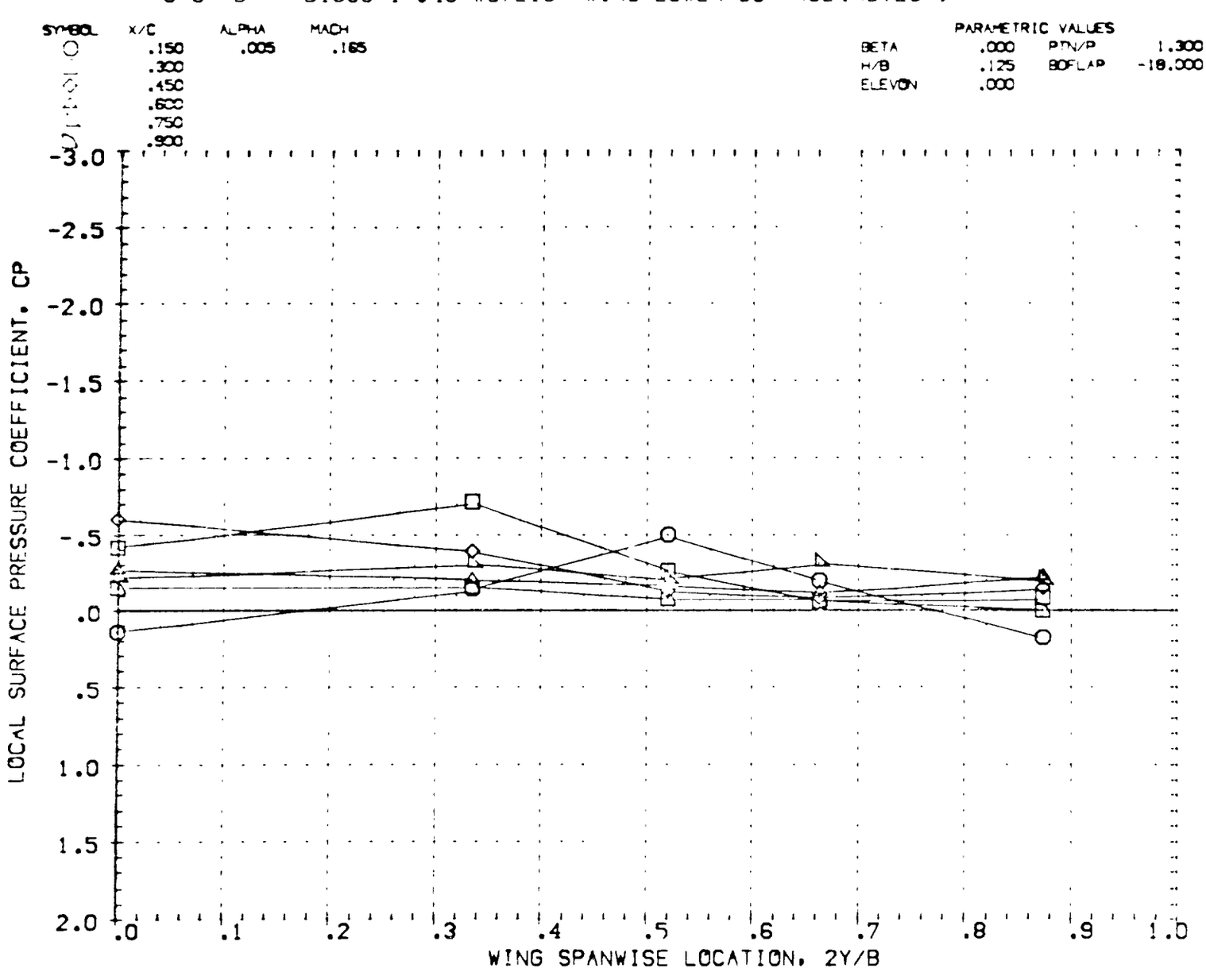


FIG 54 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

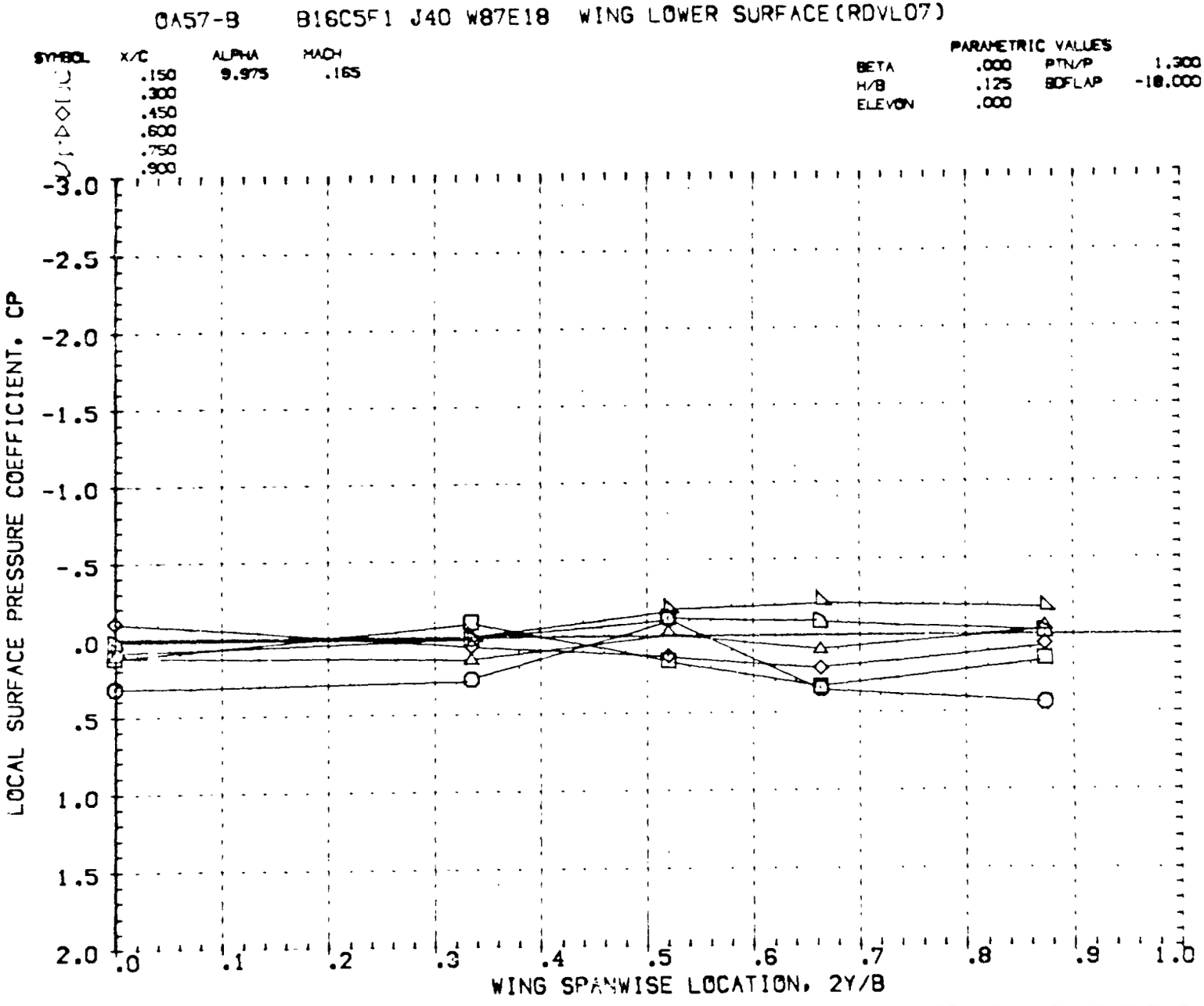


FIG 54 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

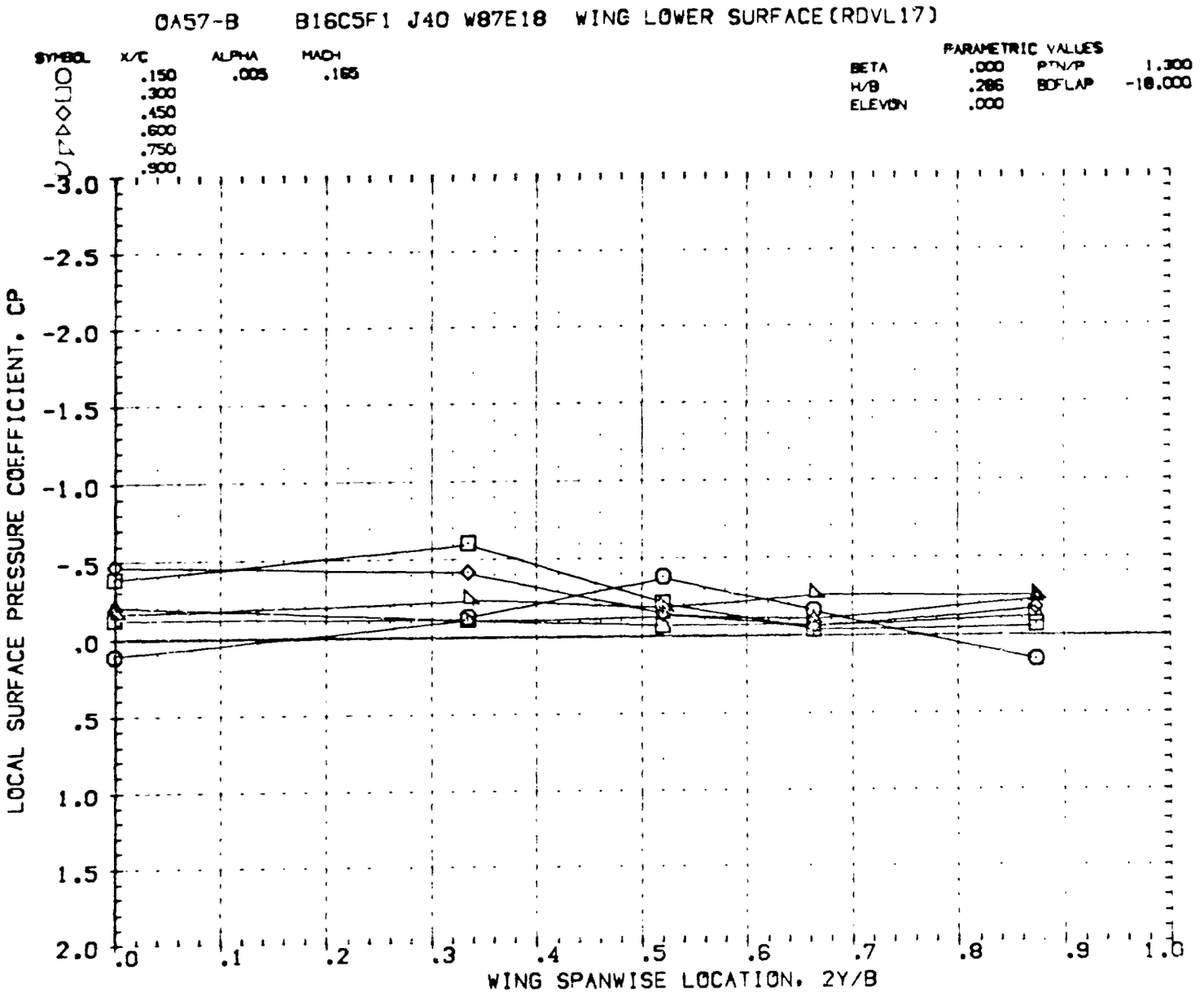


FIG 54 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

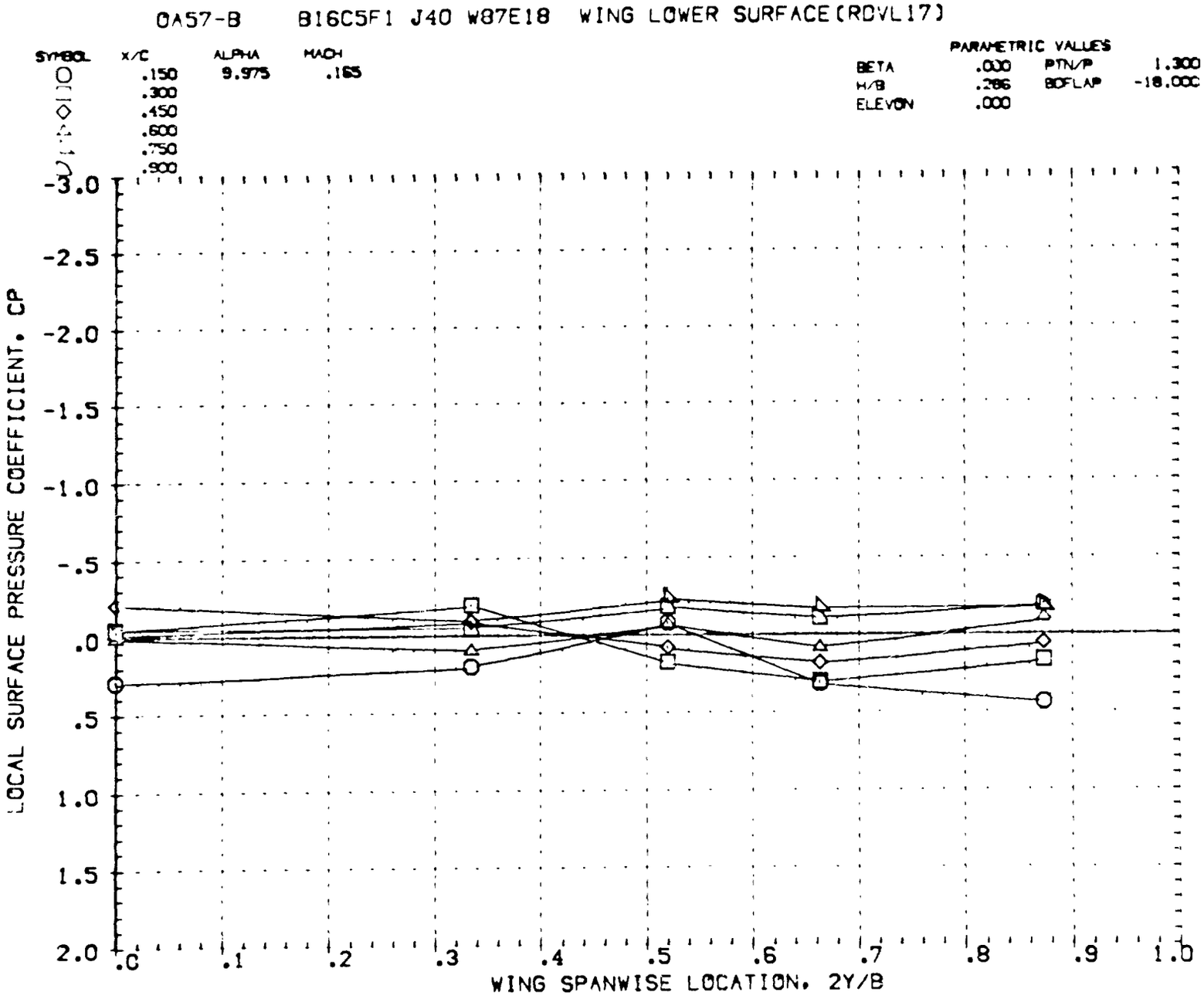


FIG 54 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 0 ELEVON

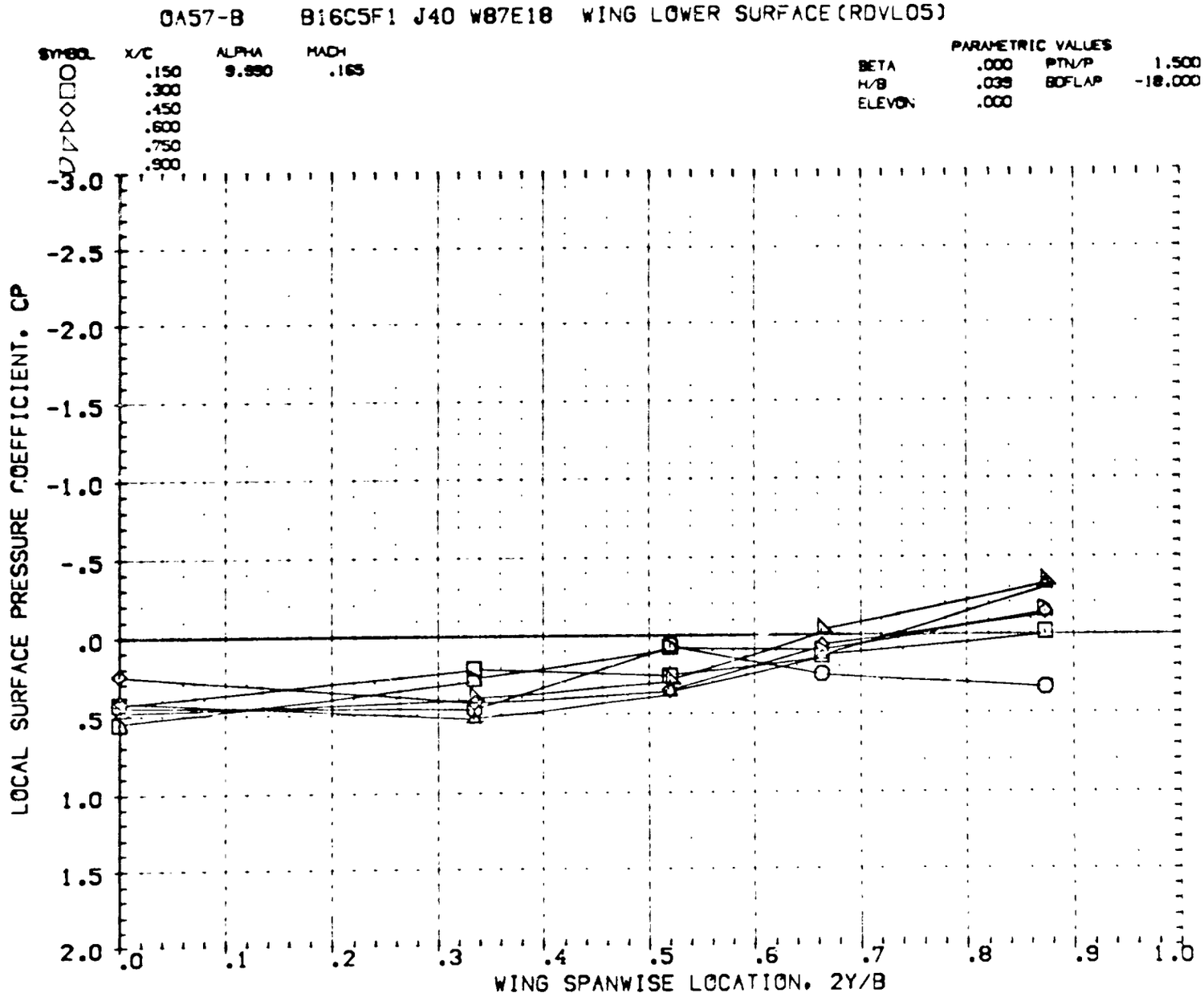


FIG 55 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

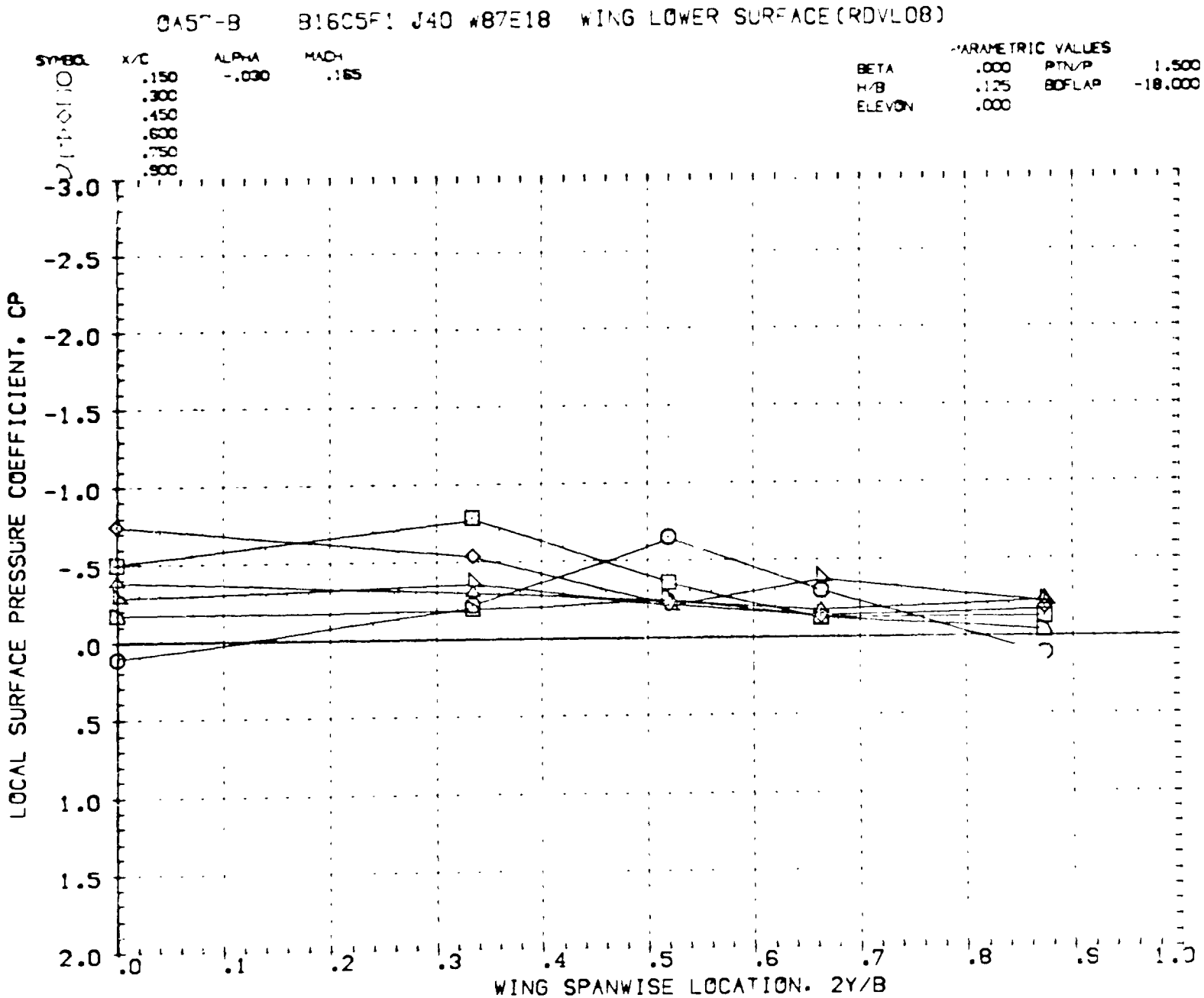


FIG 55 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

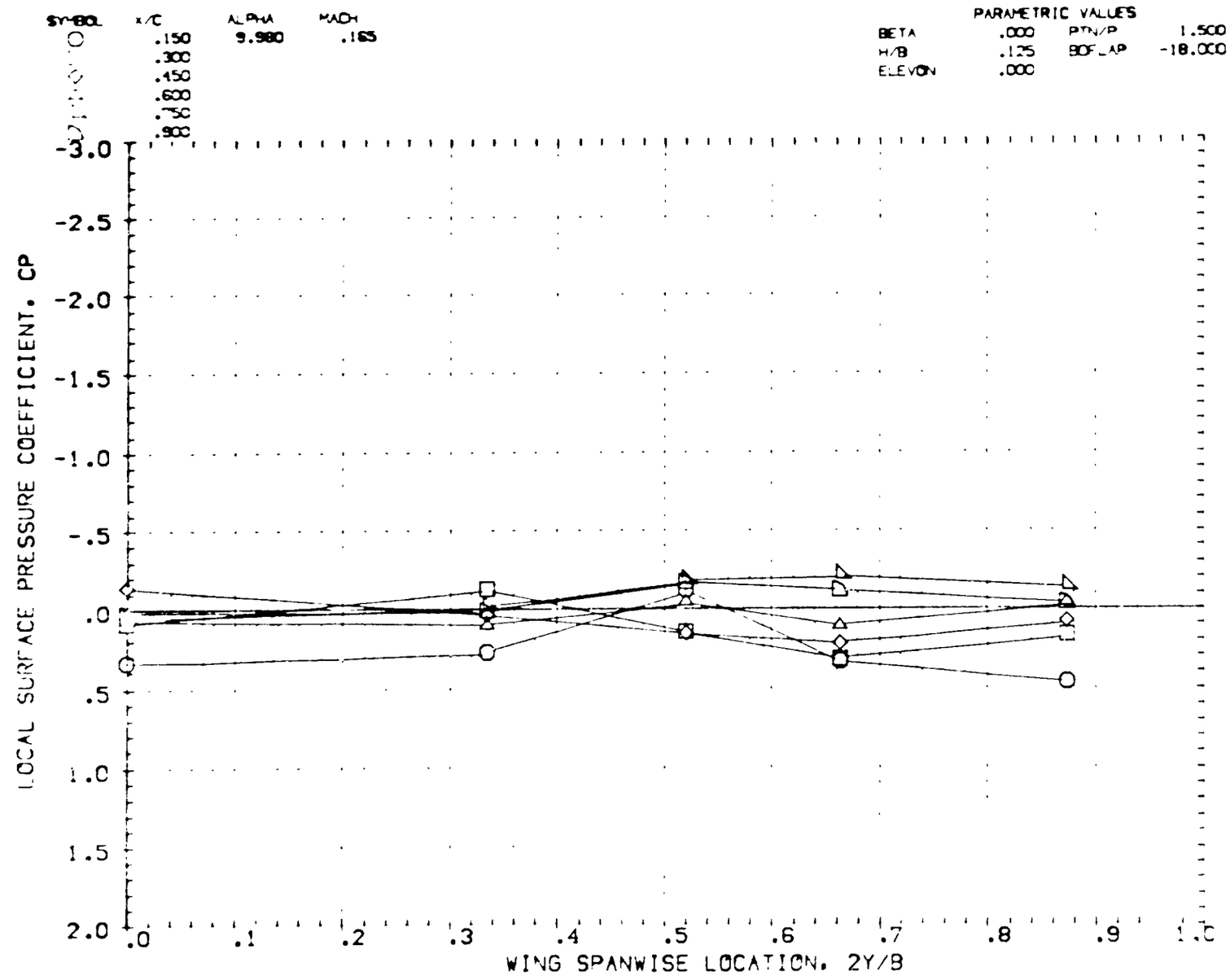


FIG 55 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P= [illegible] ELEVO,

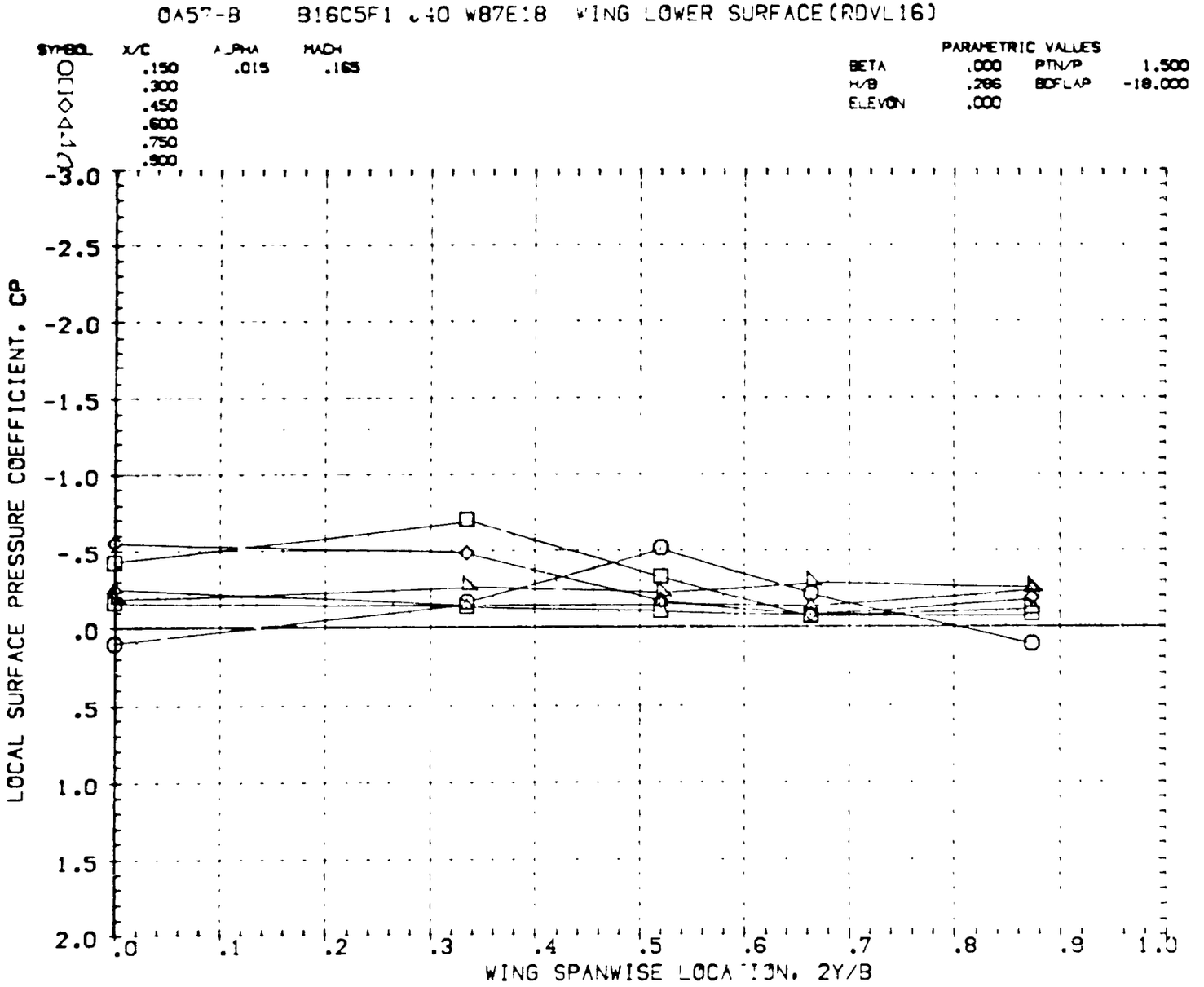


FIG 55 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

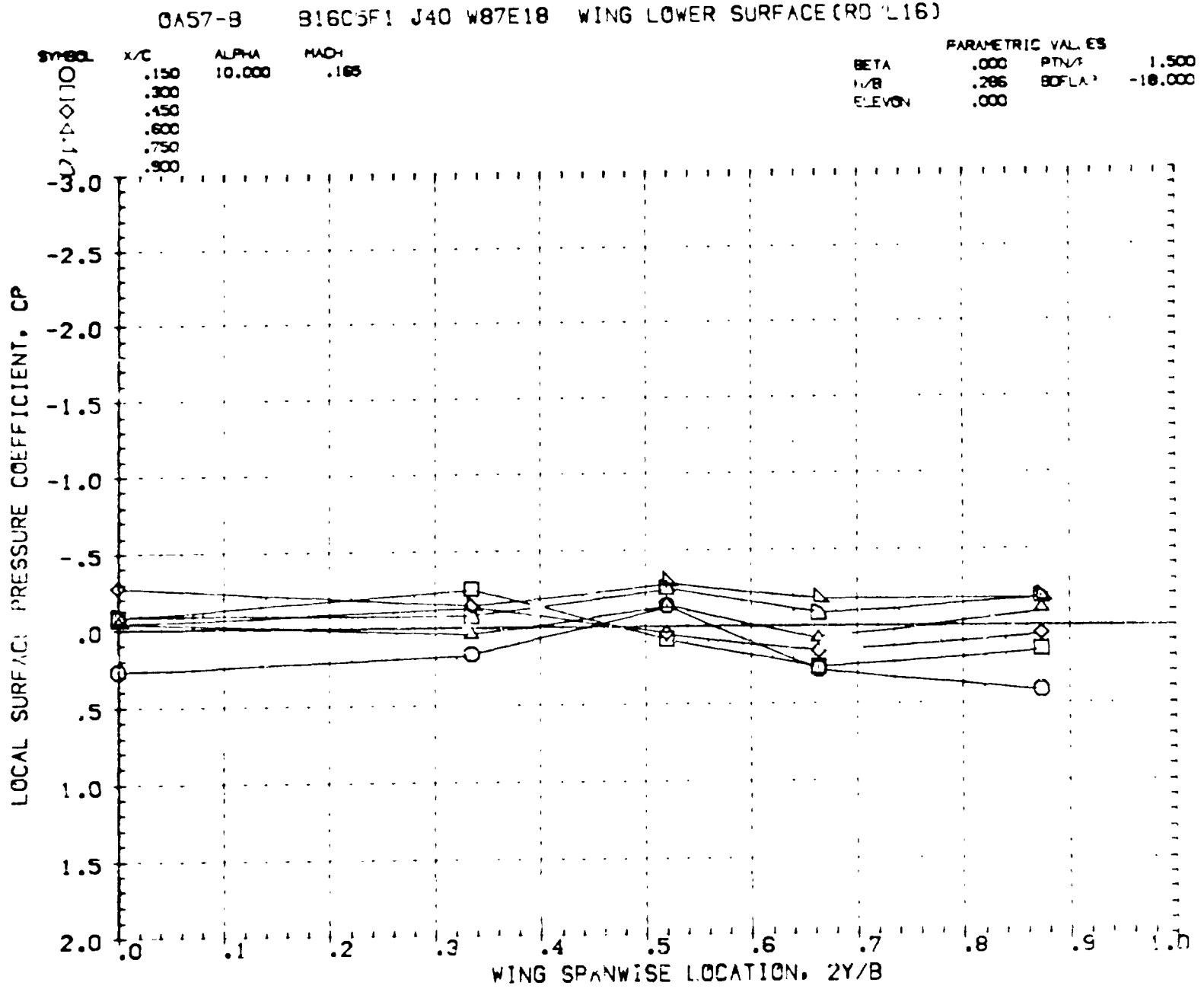


FIG 55 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 0 ELEVON

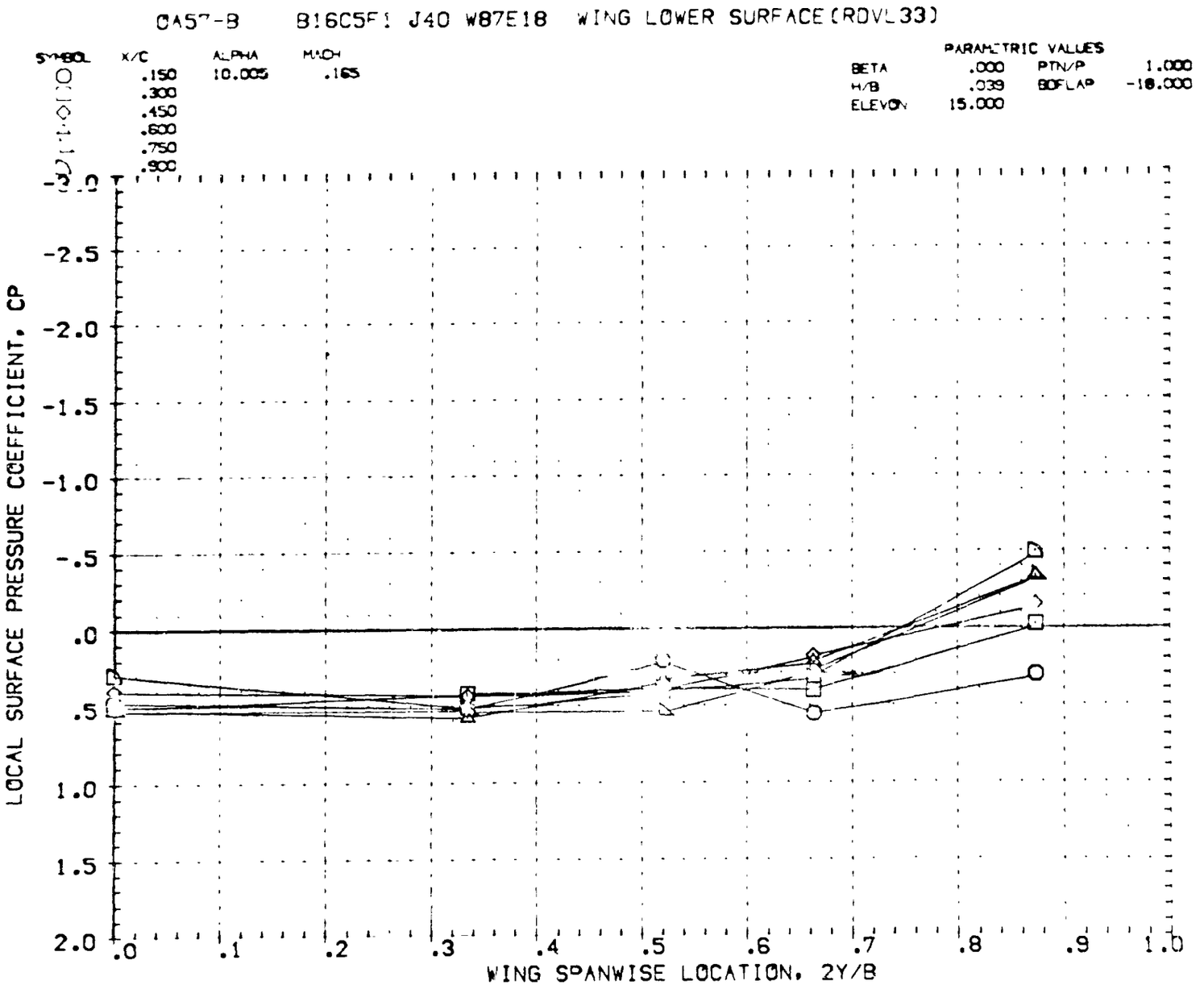


FIG 56 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0, 15 ELEVO

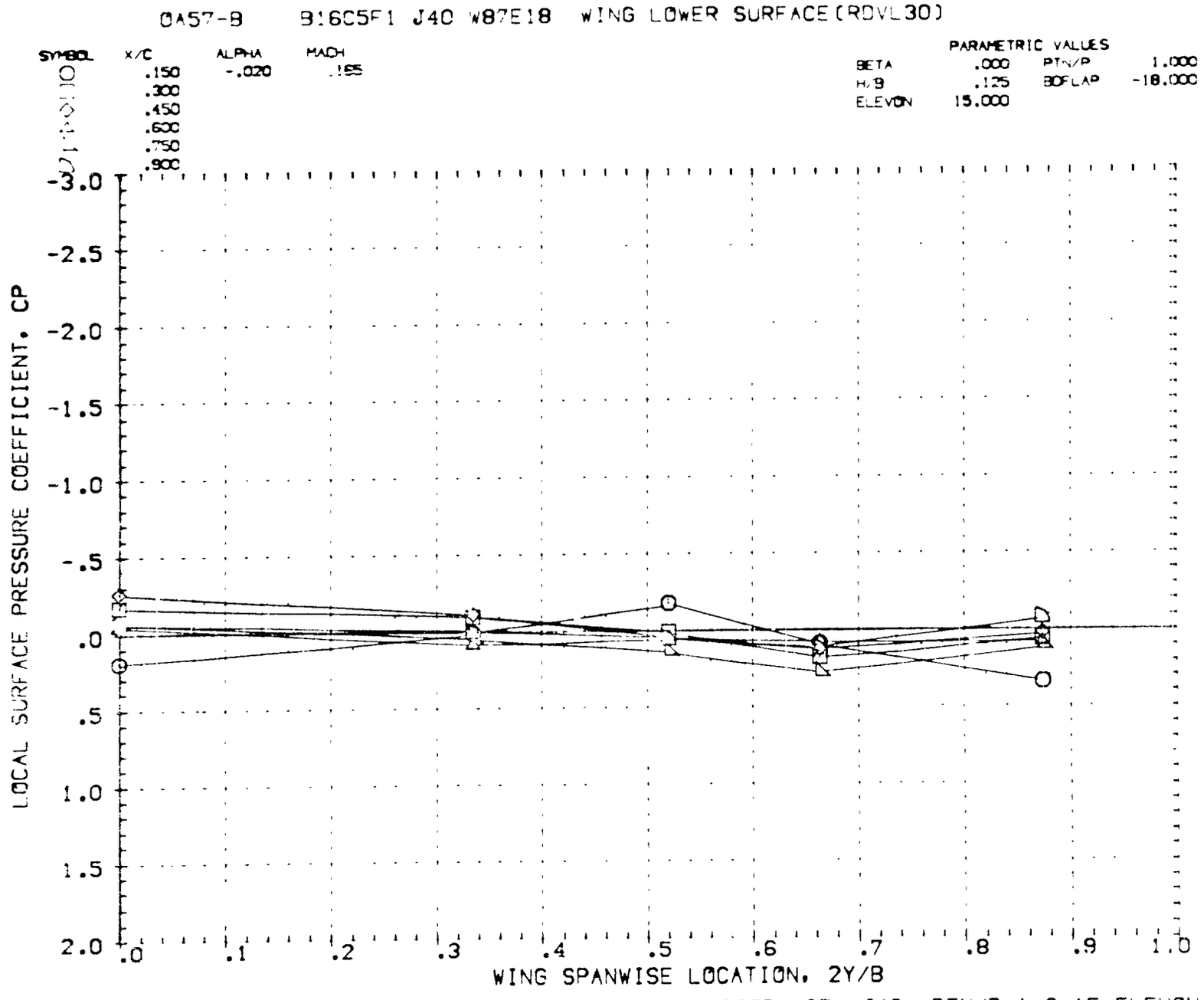


FIG 56 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

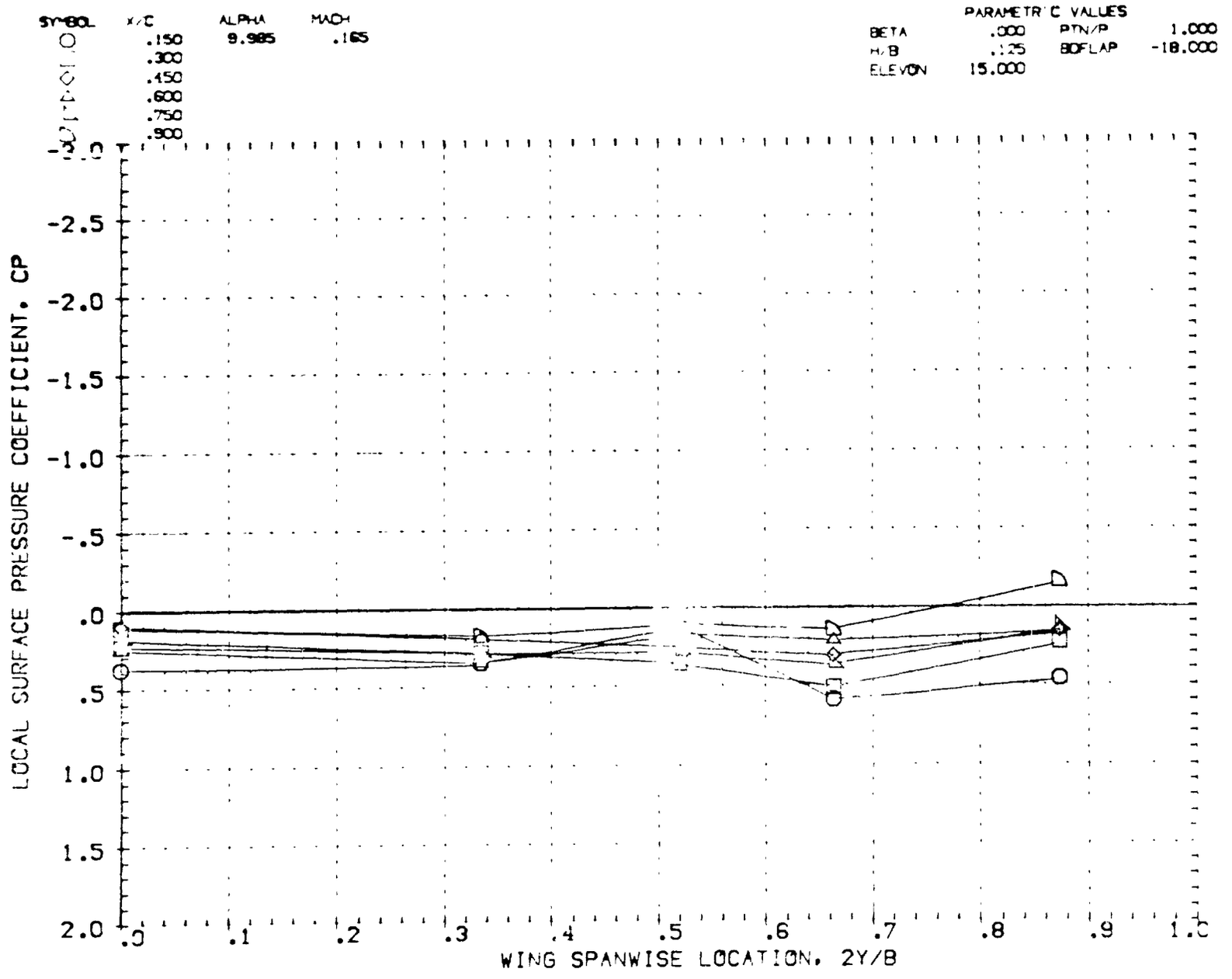


FIG 56 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

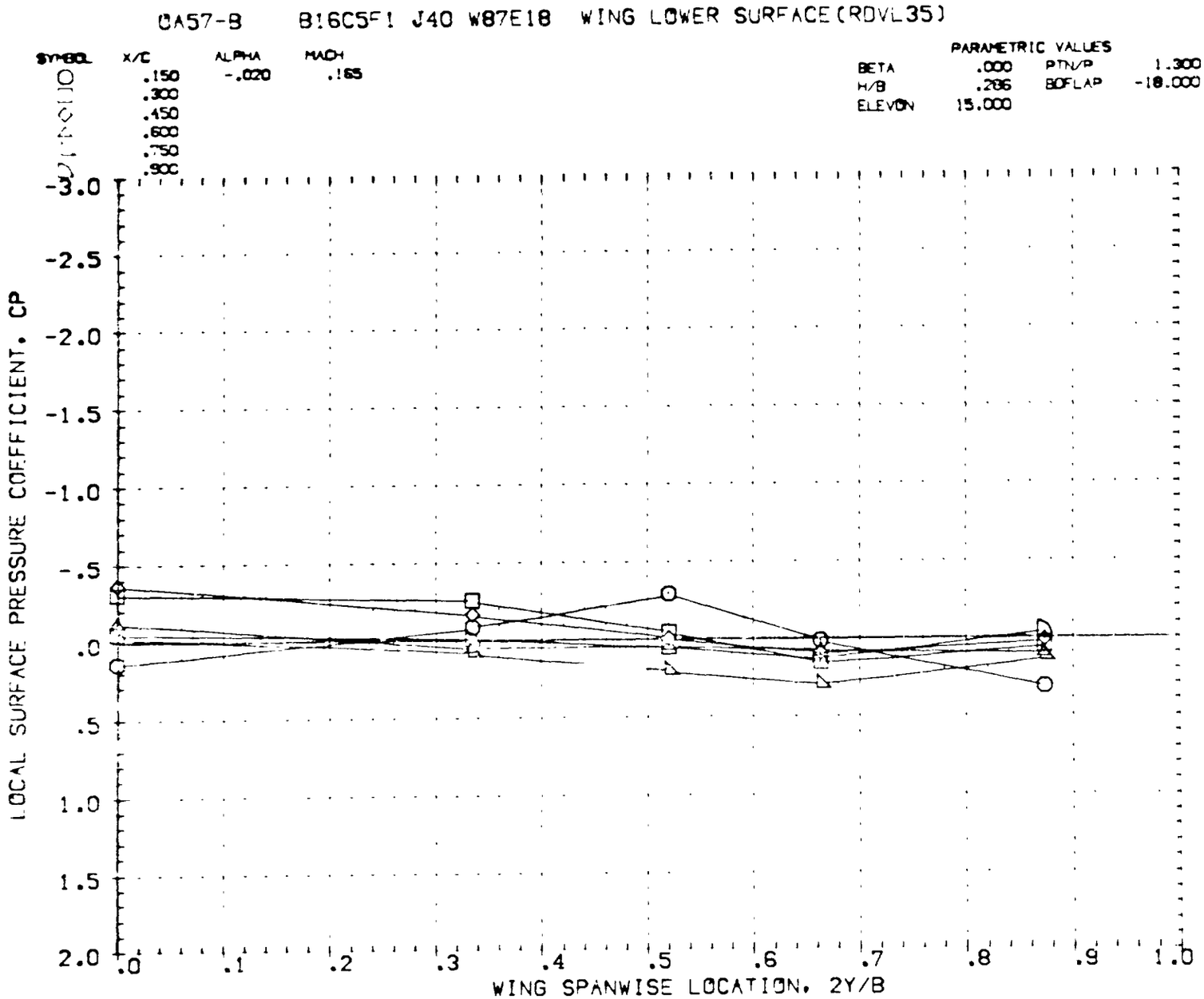


FIG 56 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.0,15 ELEVON

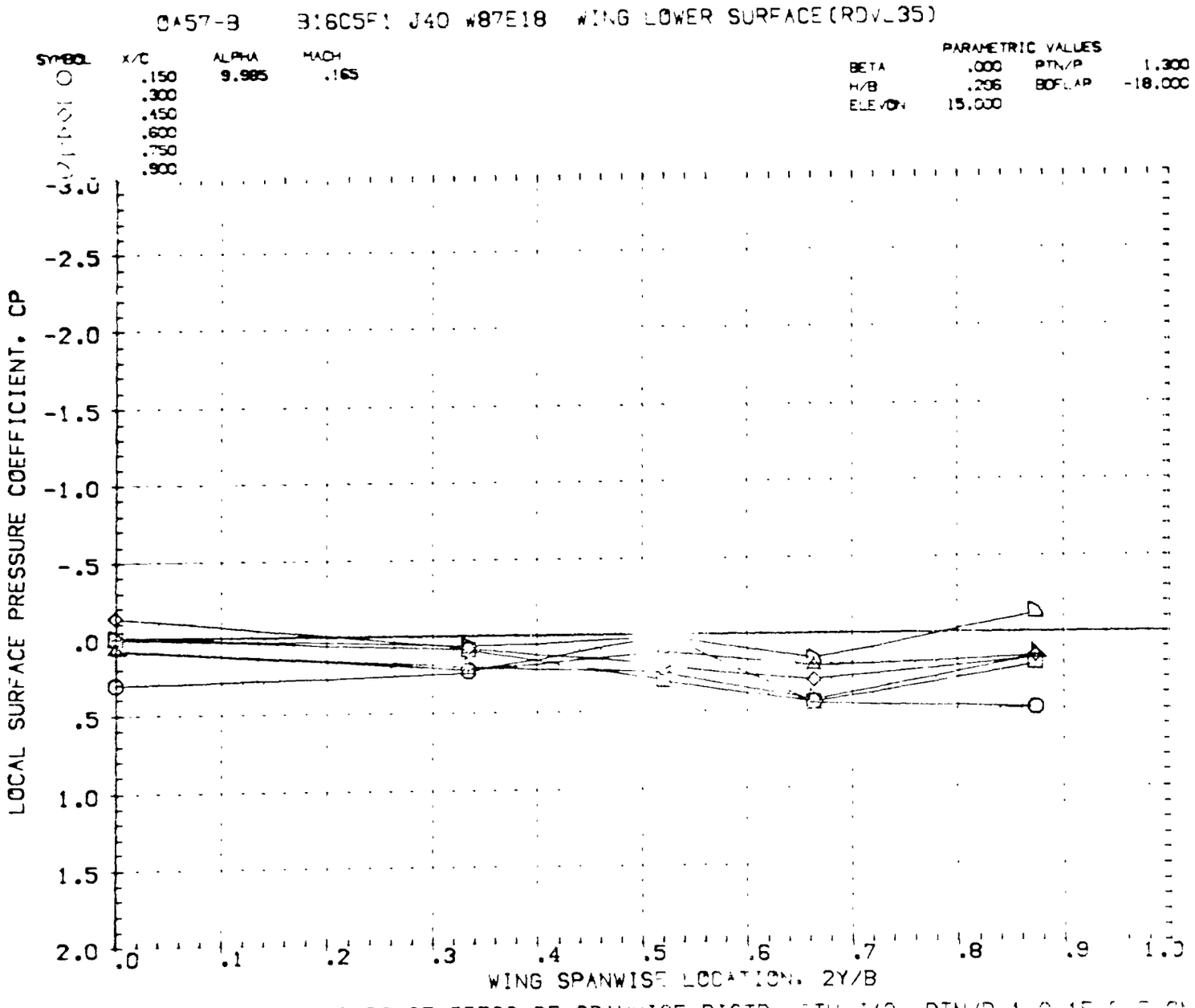


FIG 56 WING LOWER SURFACE PRESSURE SPANWISE DIST. WITH J40, PTN/P=1.0,15 ELEVON

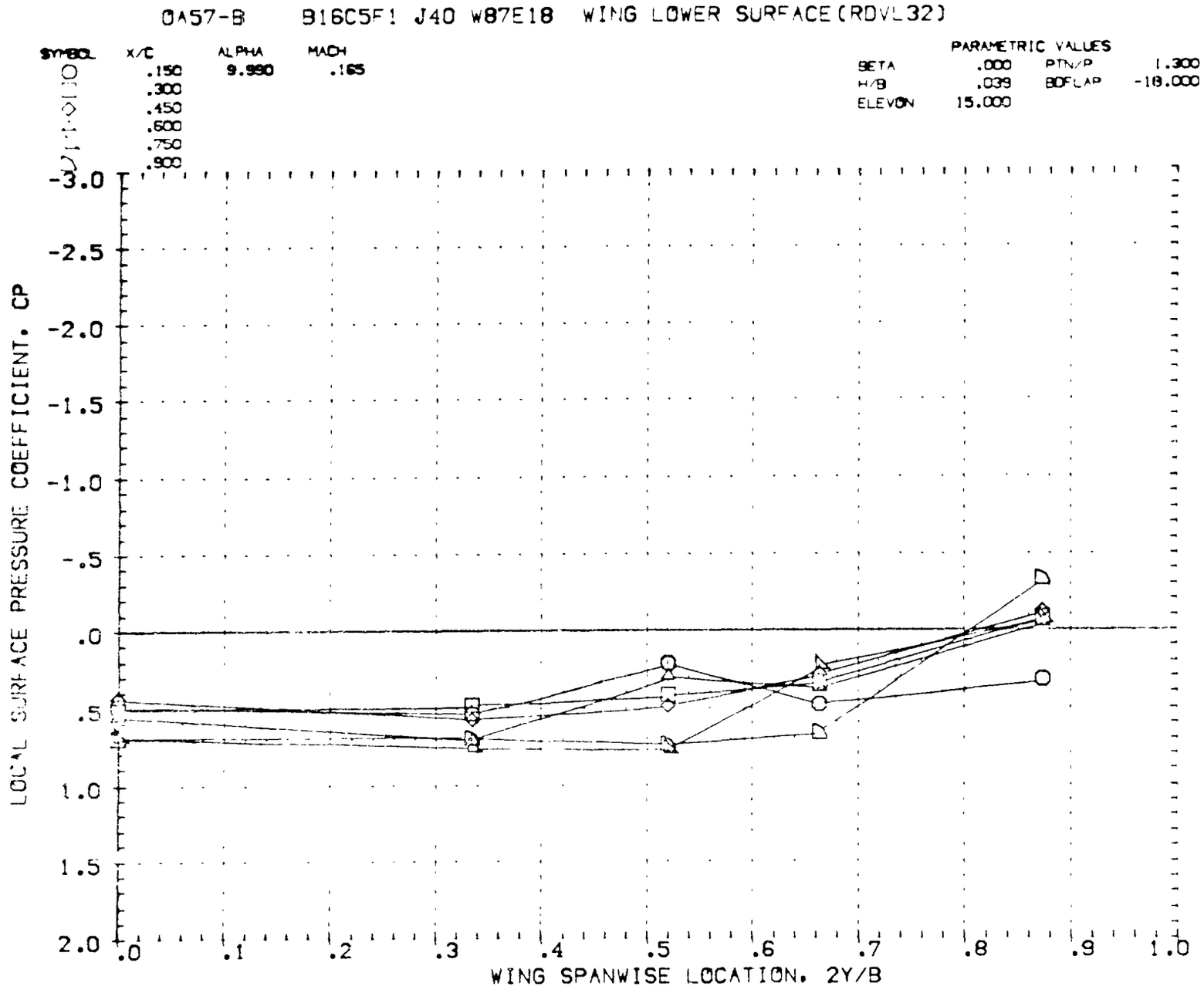


FIG 57 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

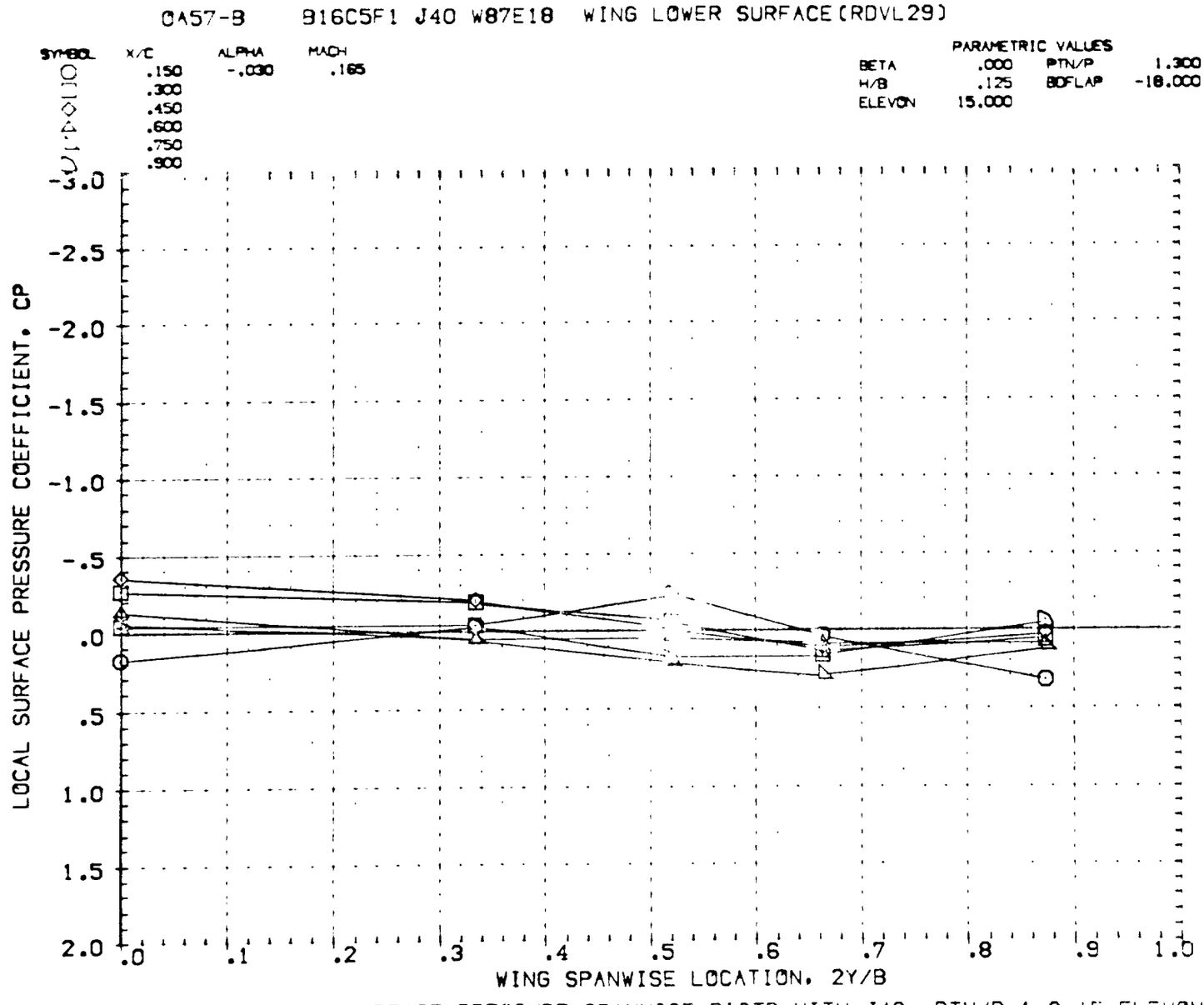


FIG 57 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 15 ELEVON

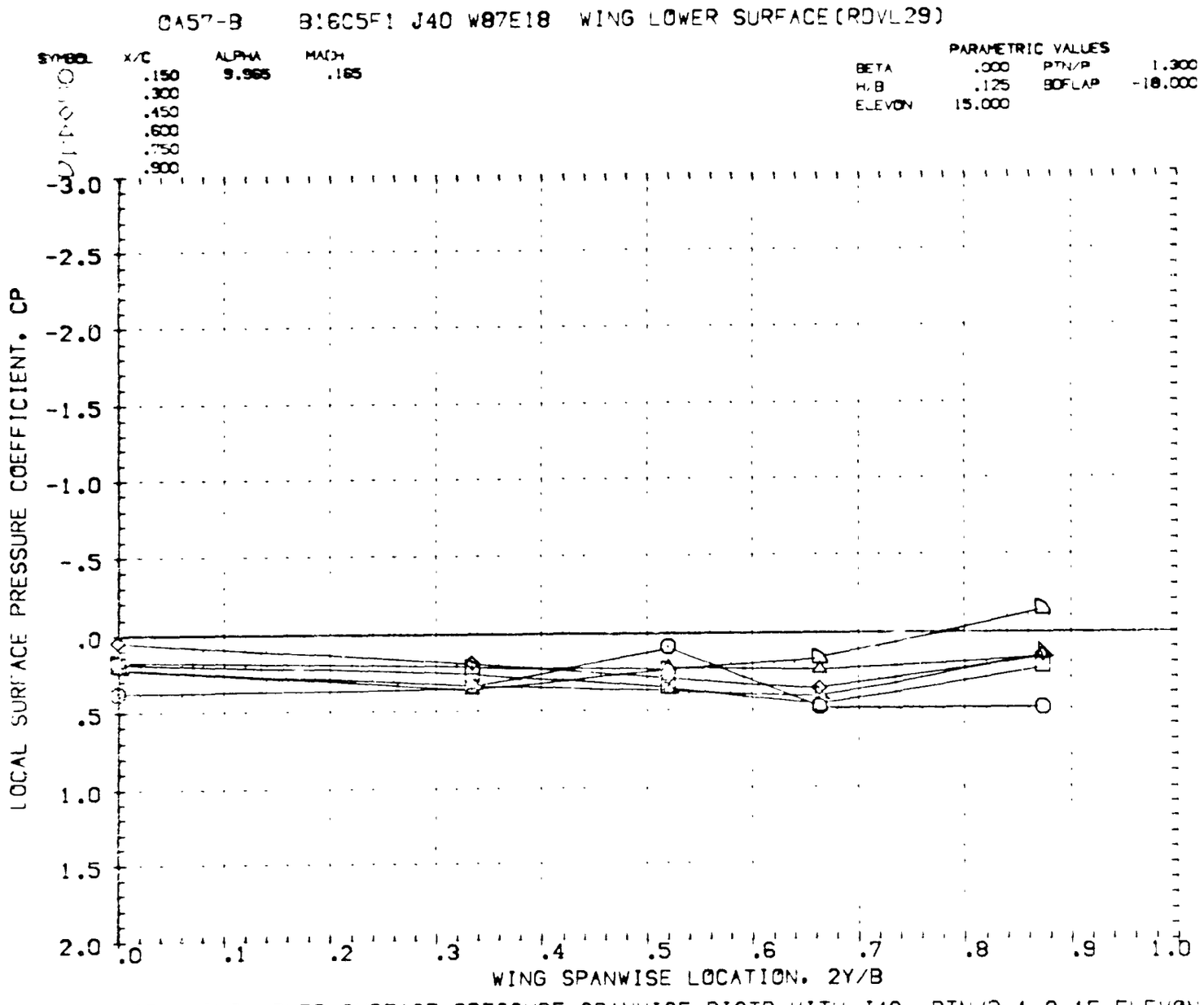


FIG 57 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

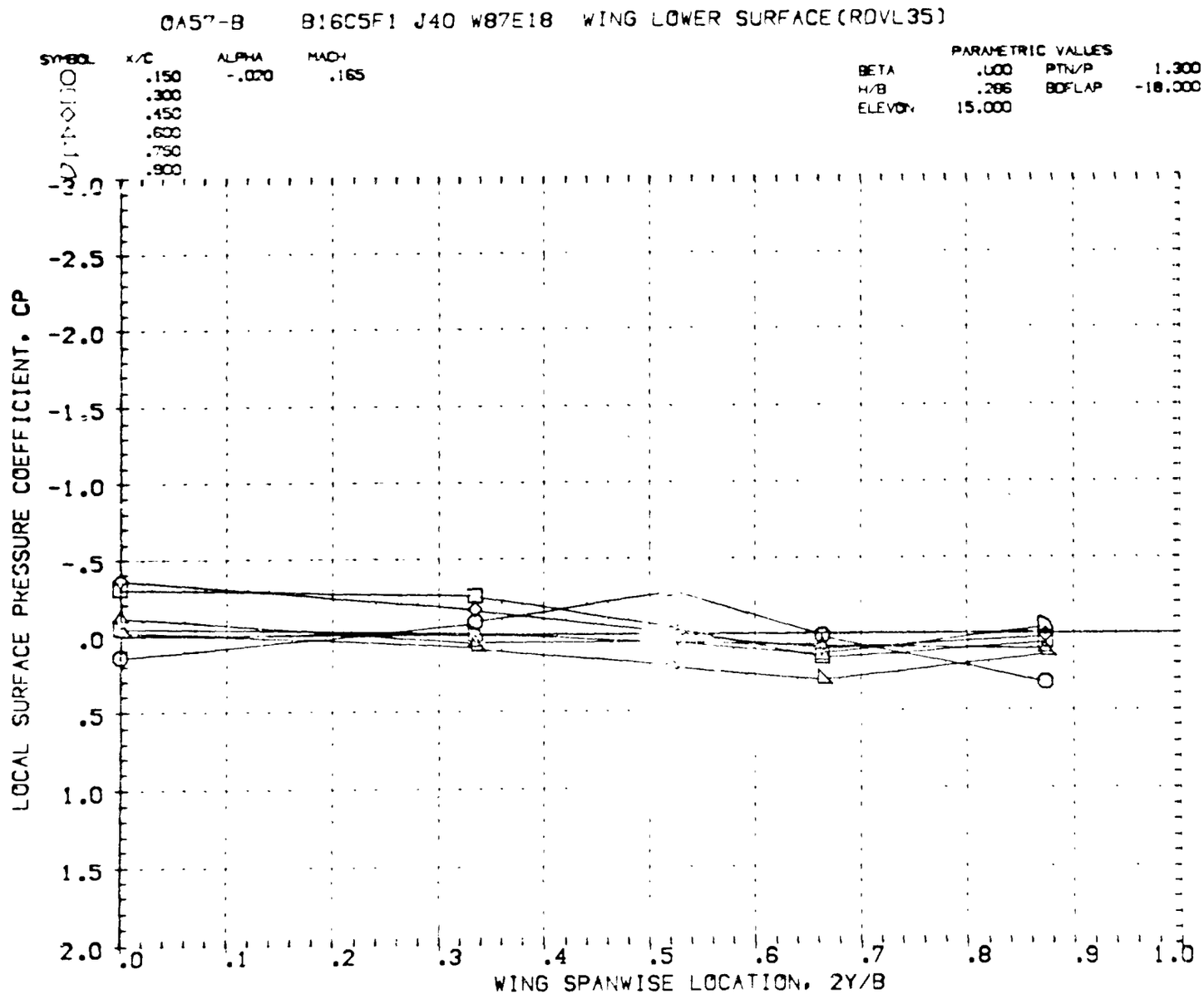


FIG 57 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3, 15 ELEVON

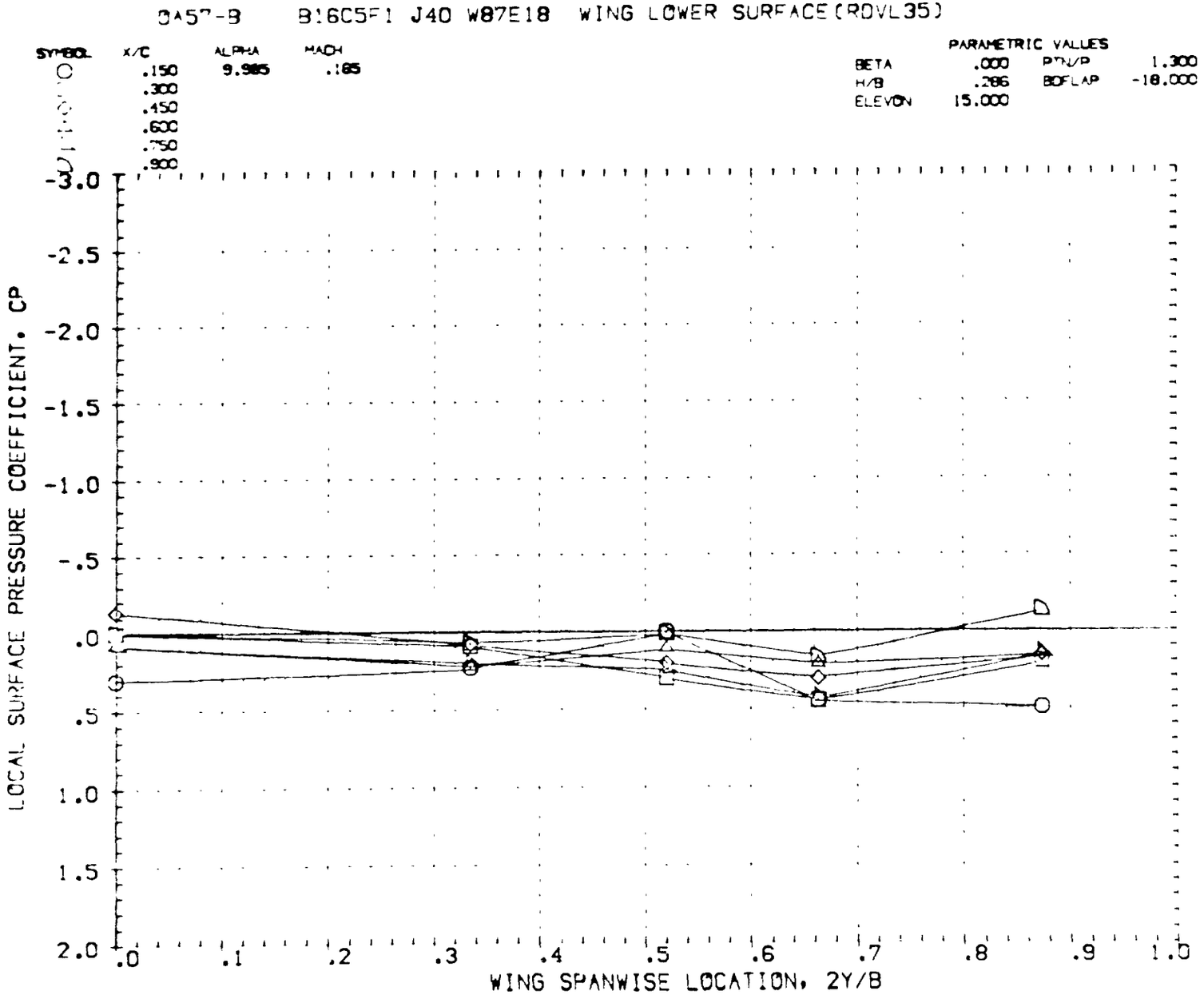


FIG 57 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.3,15 ELEVON

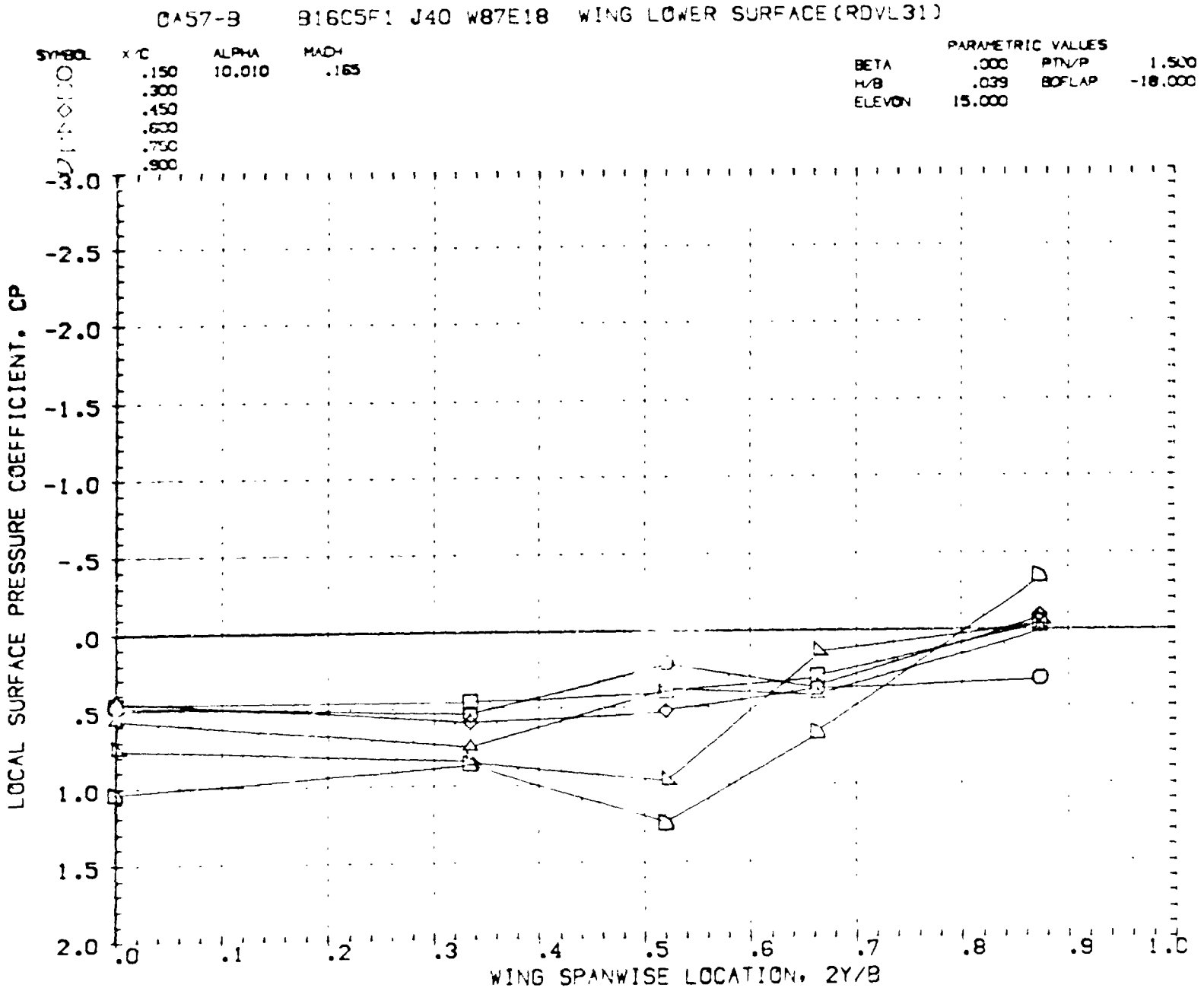


FIG 58 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, .5 ELEVON

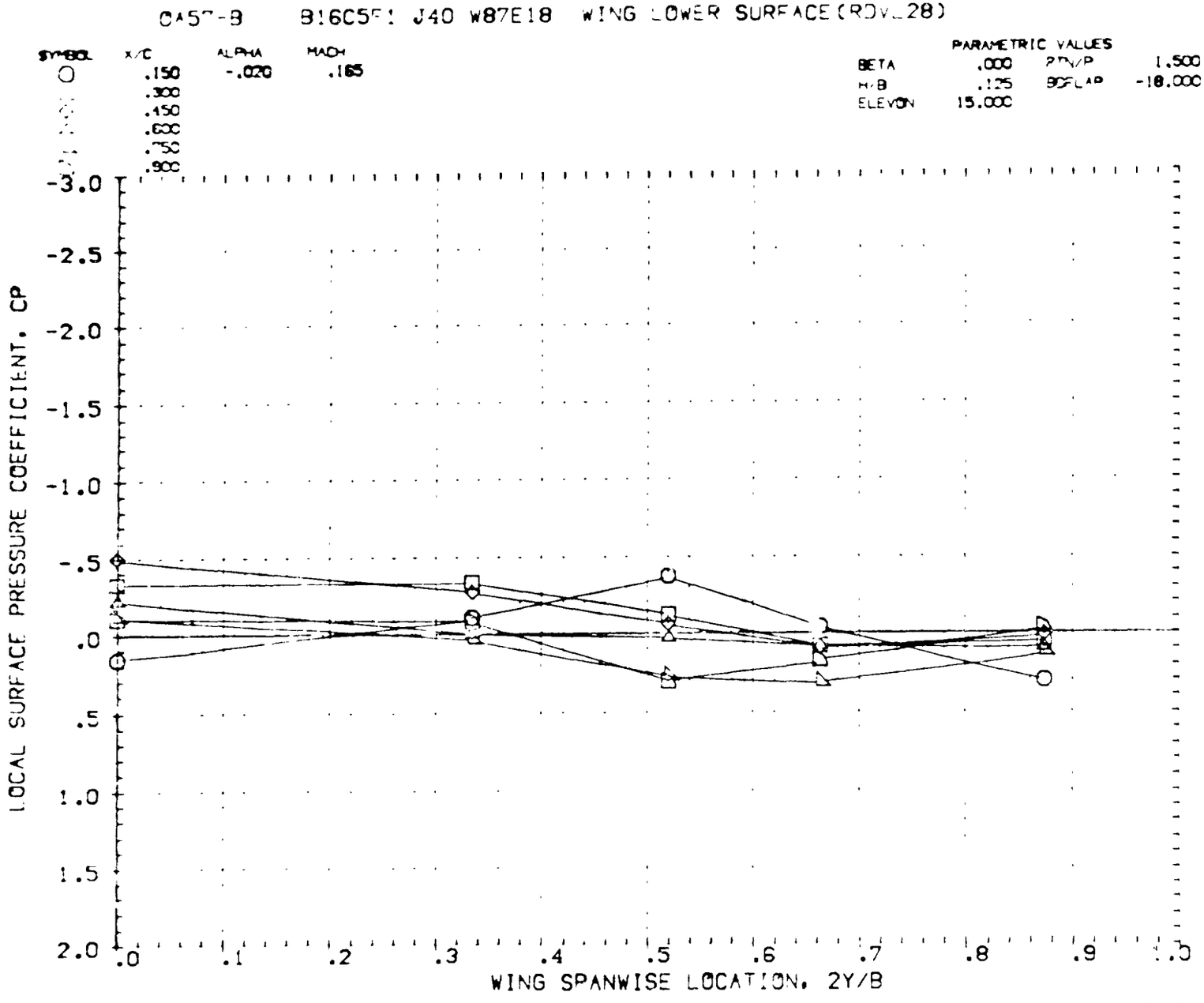


FIG 58 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 15 ELEVON

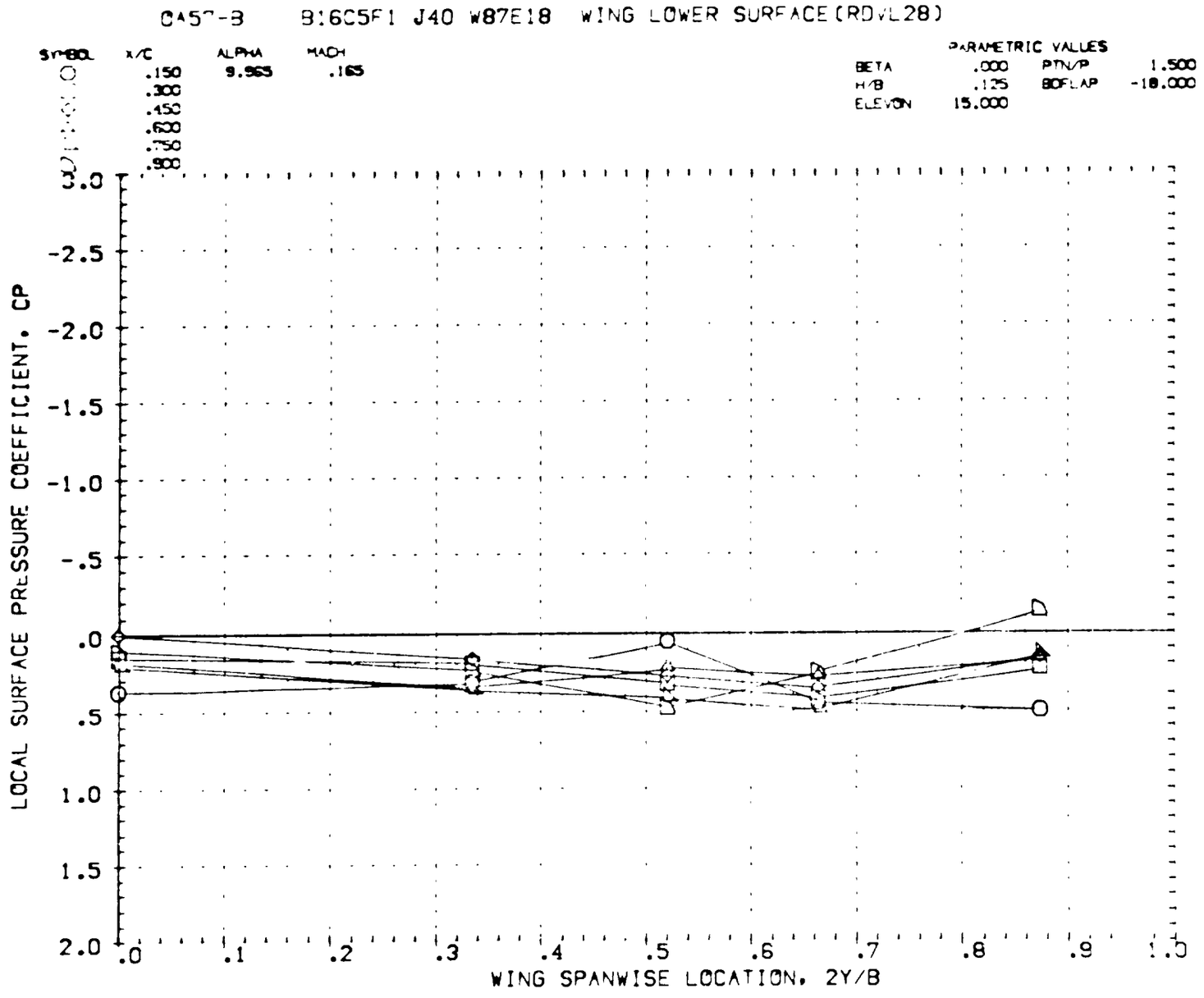


FIG 58 WING LOWER SURFACE PRESSURE SPANWISE DIS R WITH J40, PTN/P=1.5,15 ELEVON

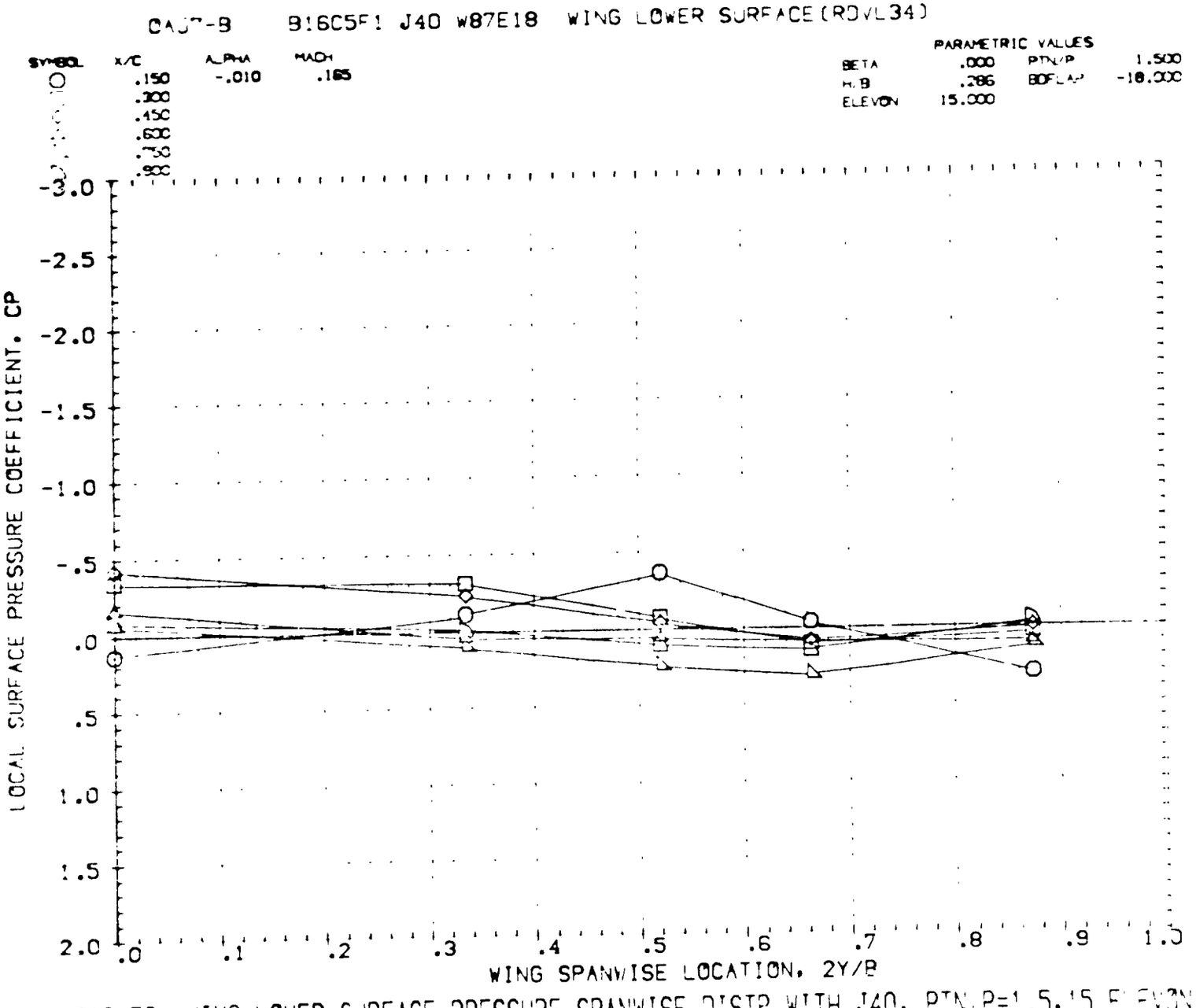


FIG 58 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J40, PTN/P=1.5, 15 ELEVON

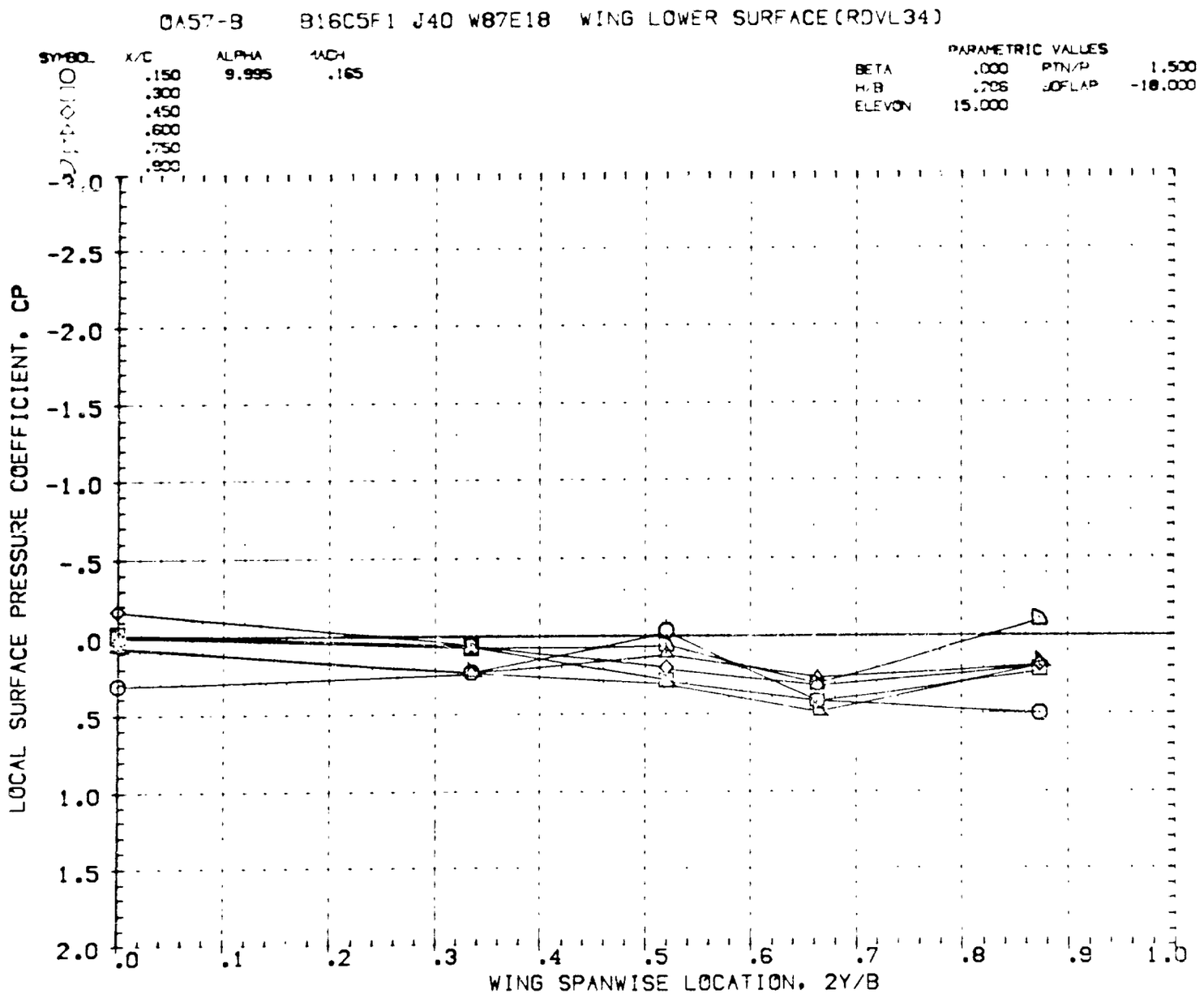


FIG 58 WING LOWER SURFACE PRESSURE SPANWISE DIST'R WITH J4C, PTN/P=1.5,15 ELE:ON

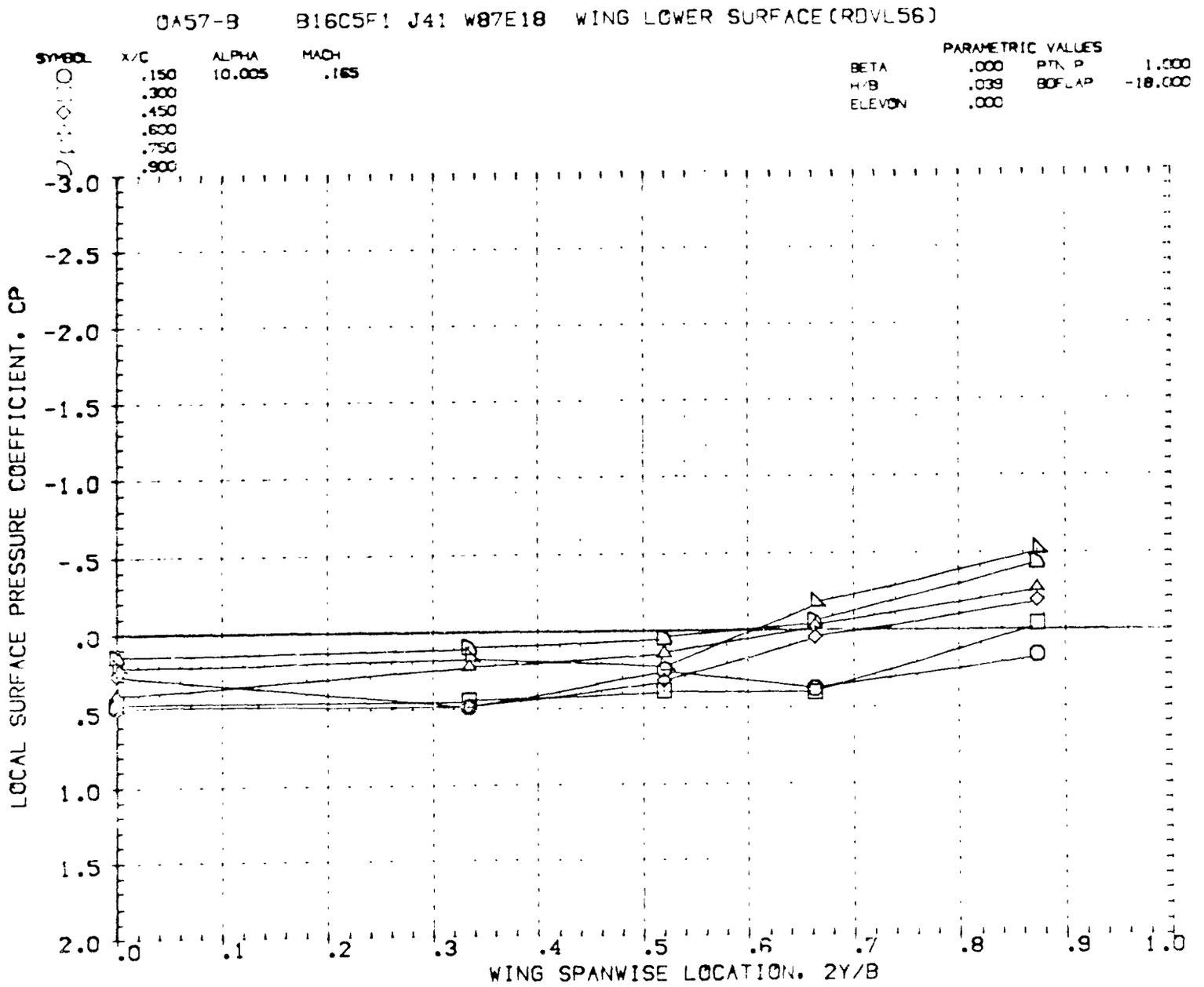


FIG 59 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

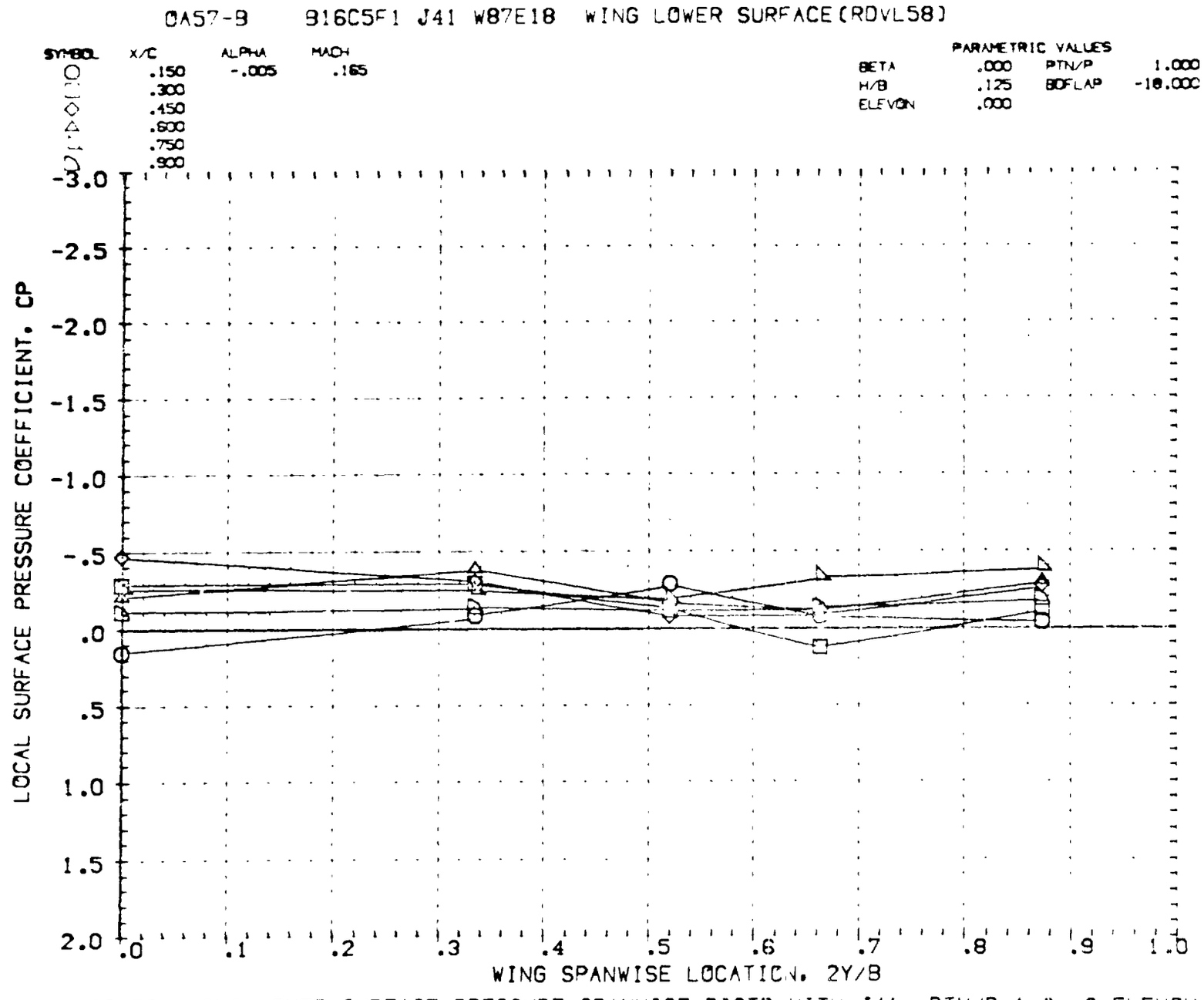


FIG 59 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

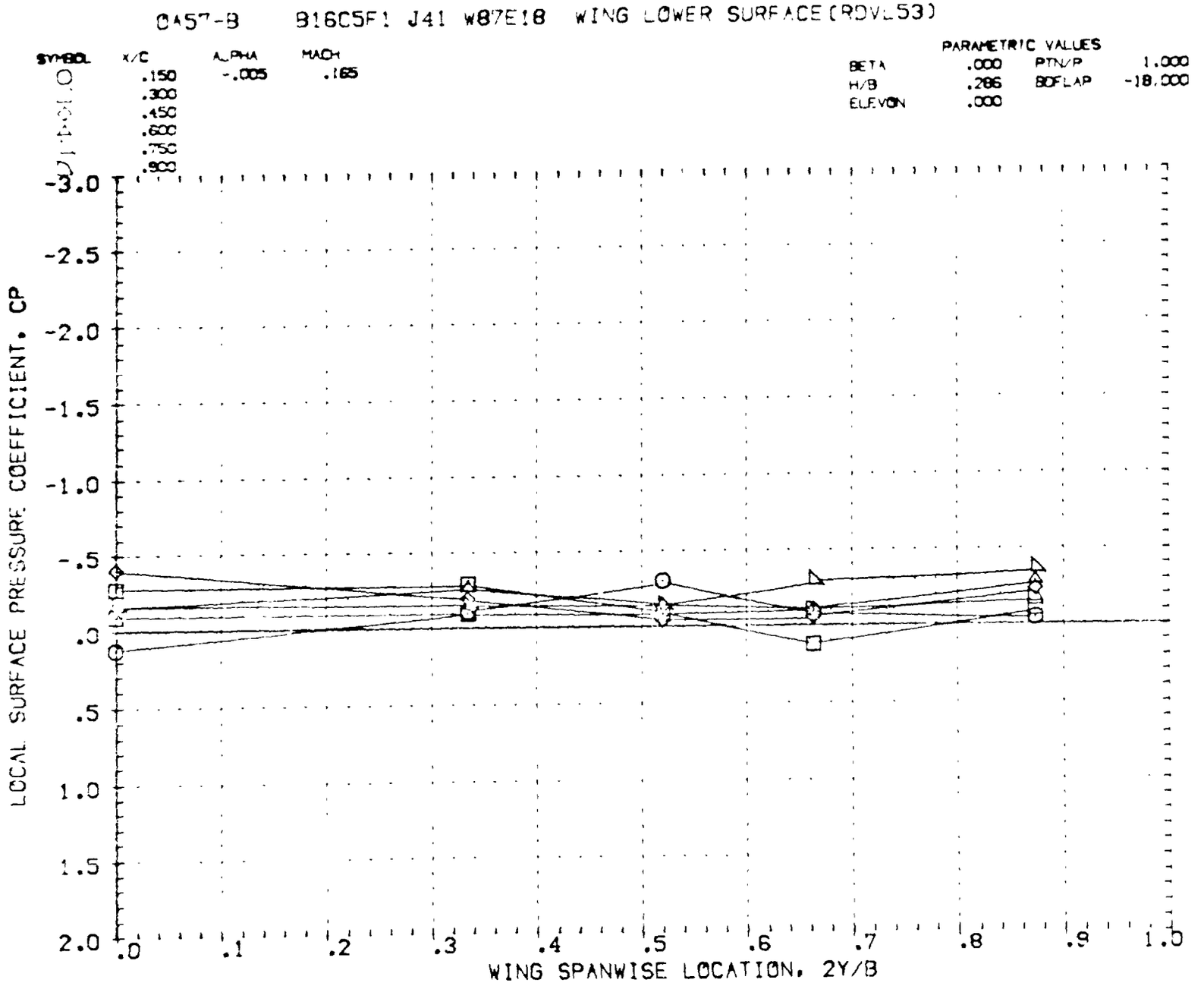


FIG 59 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

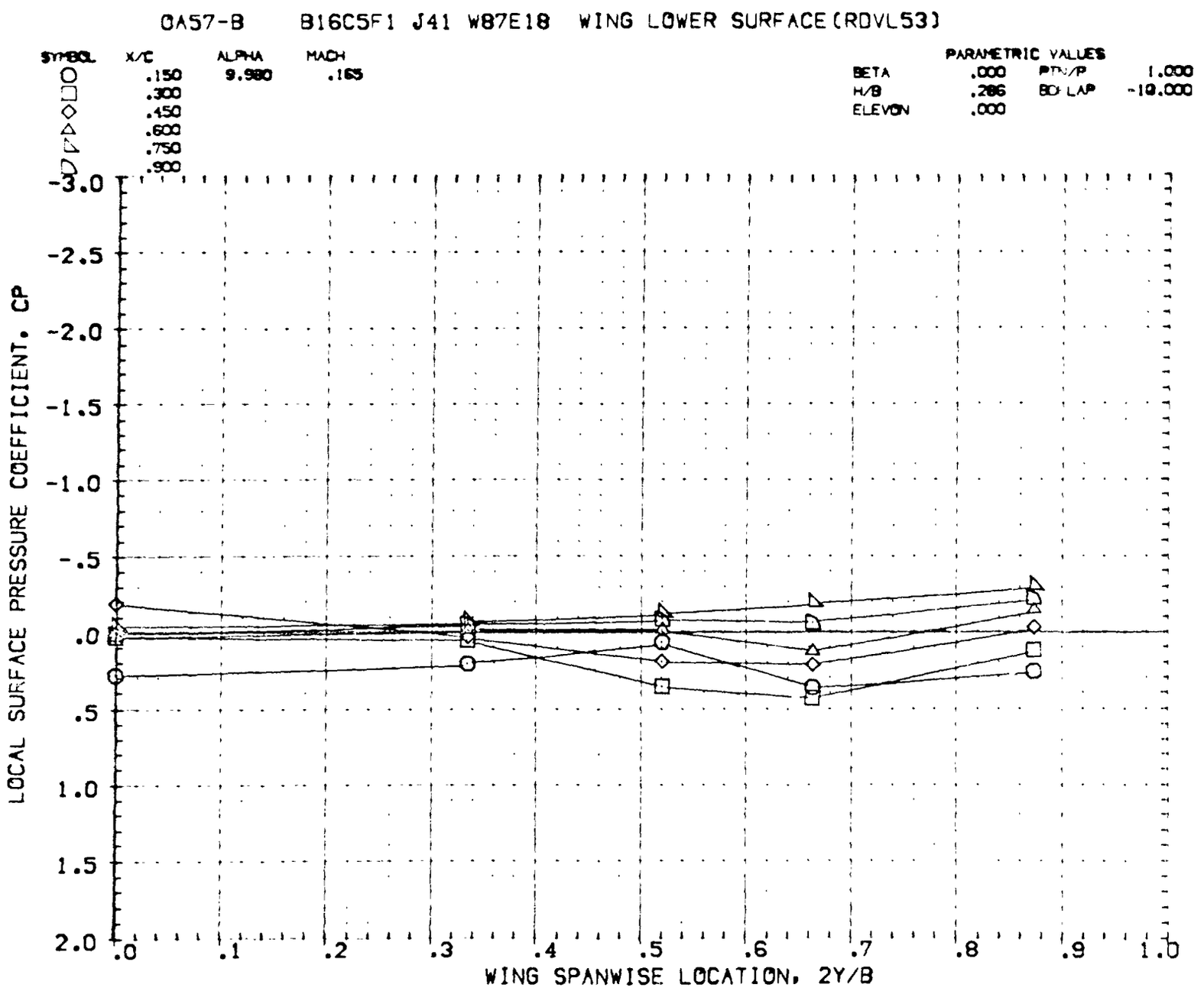


FIG 59 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.0, 0 ELEVON

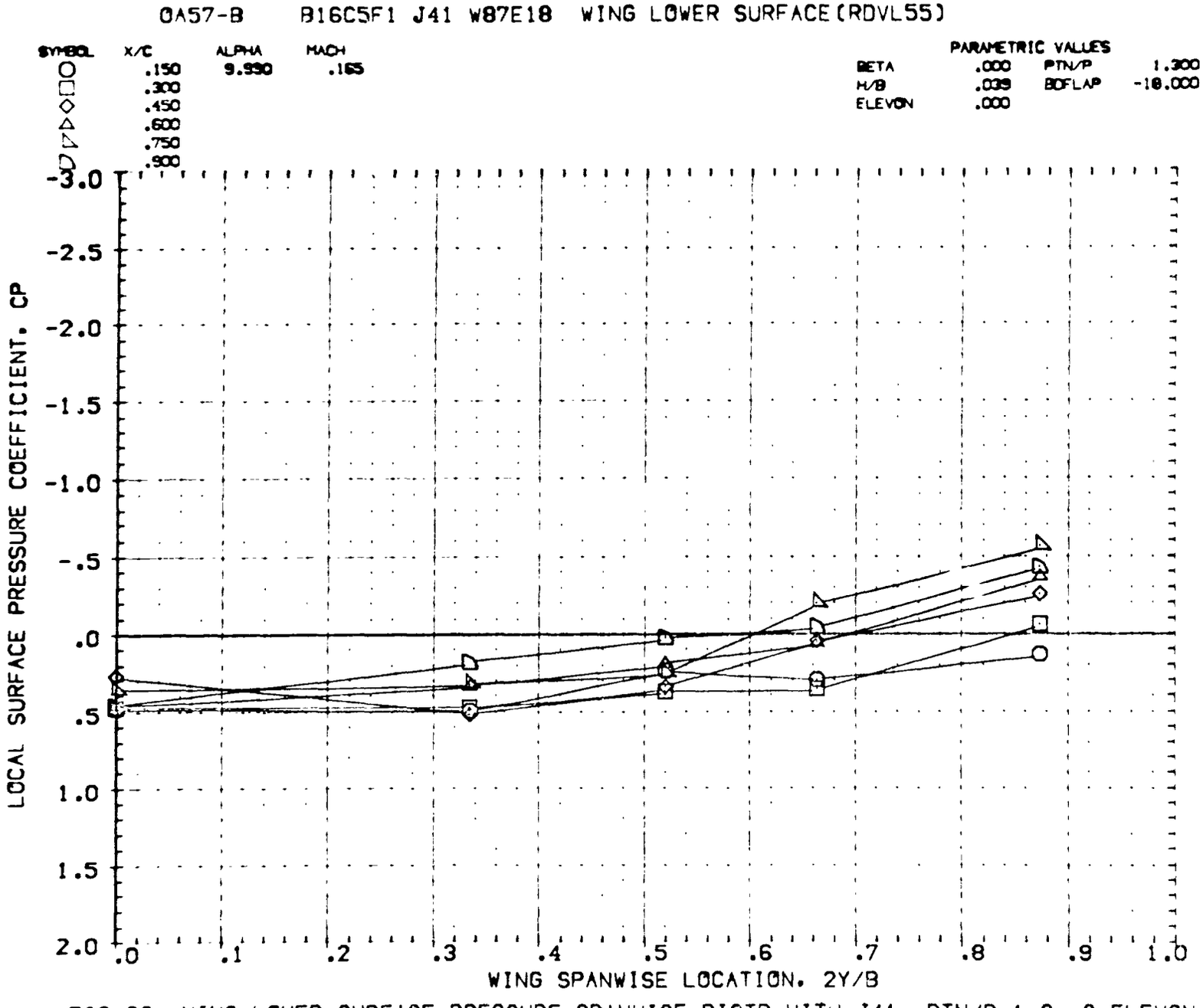


FIG 60 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVCN

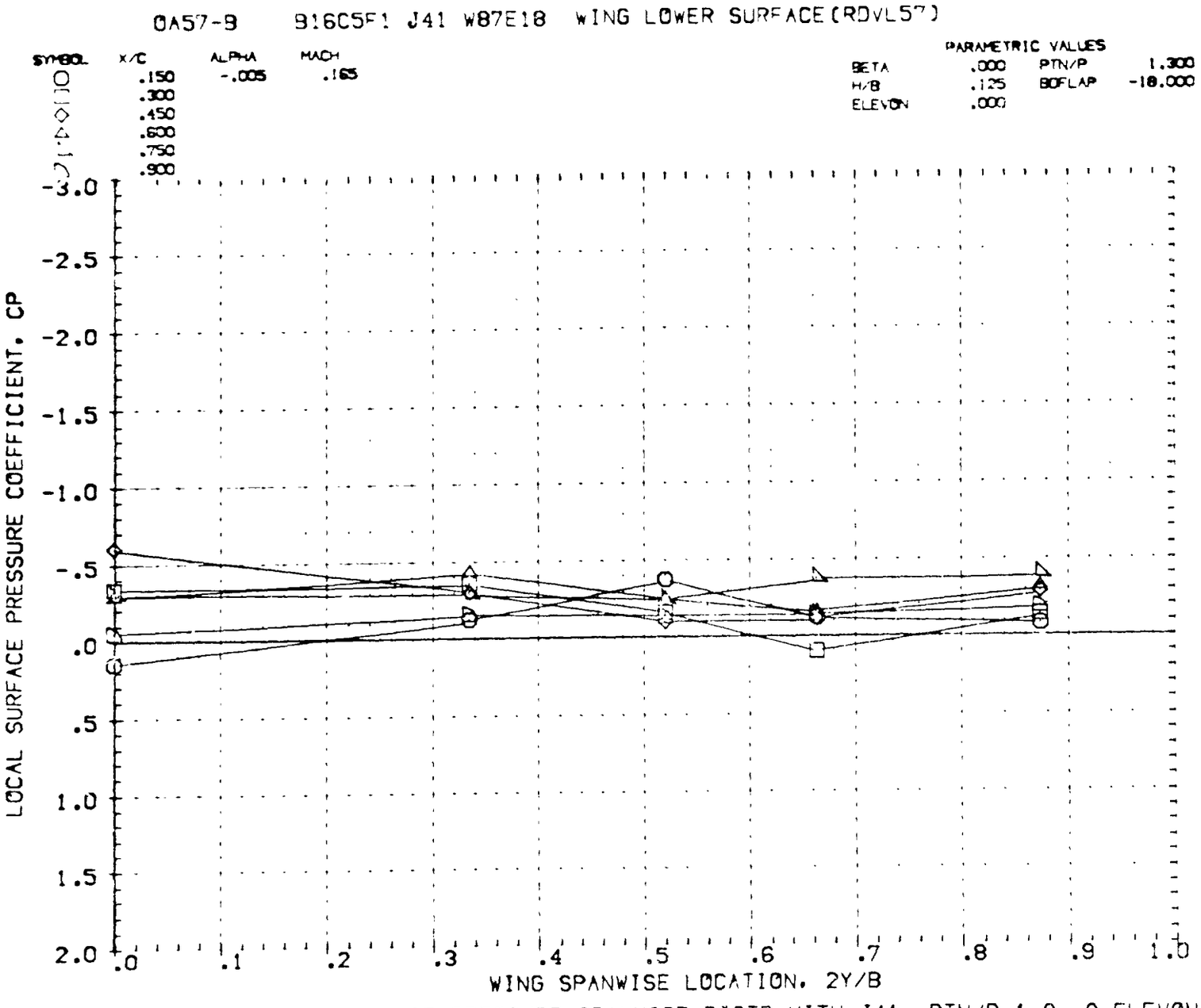


FIG 60 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVON

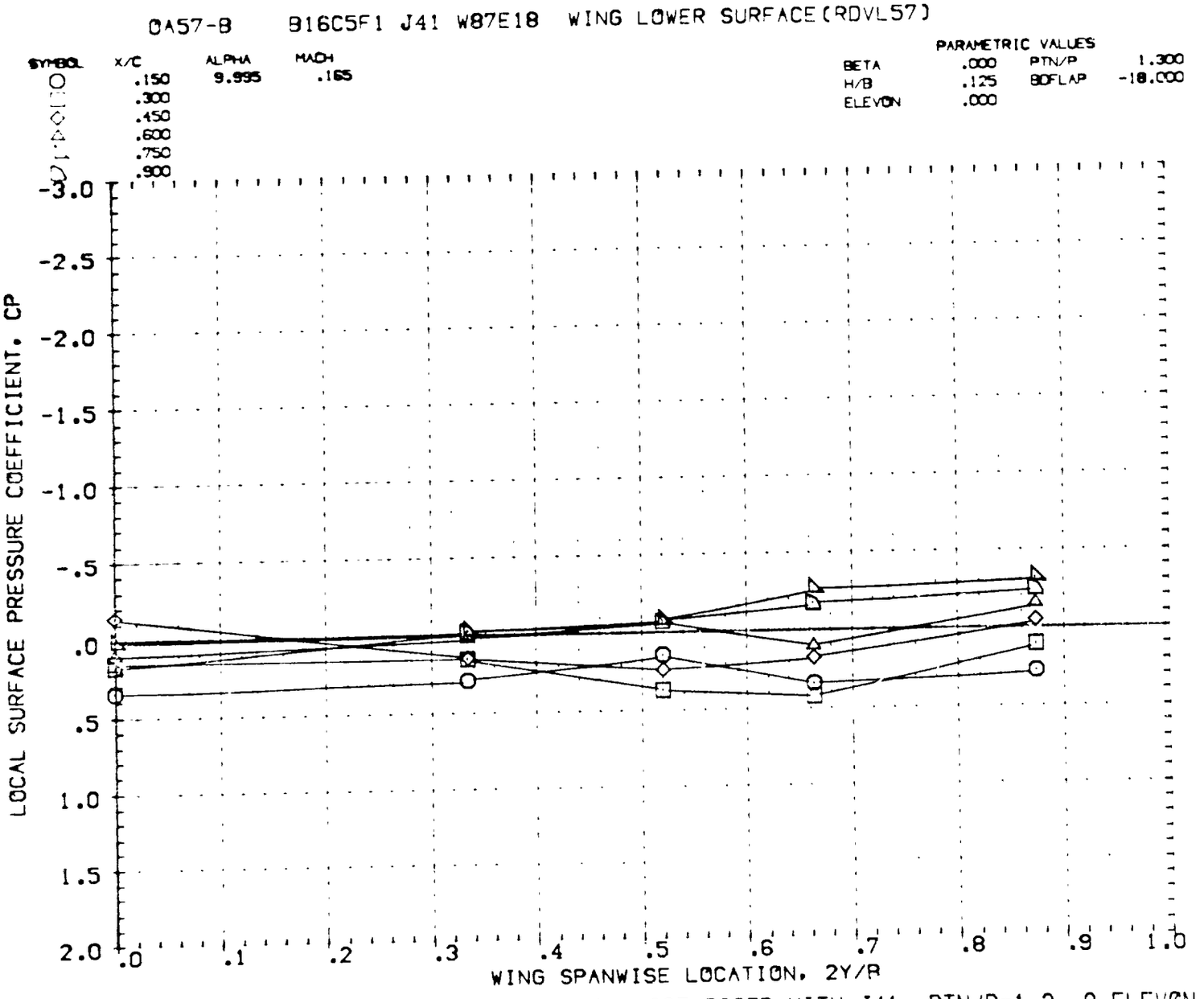


FIG 60 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVCN

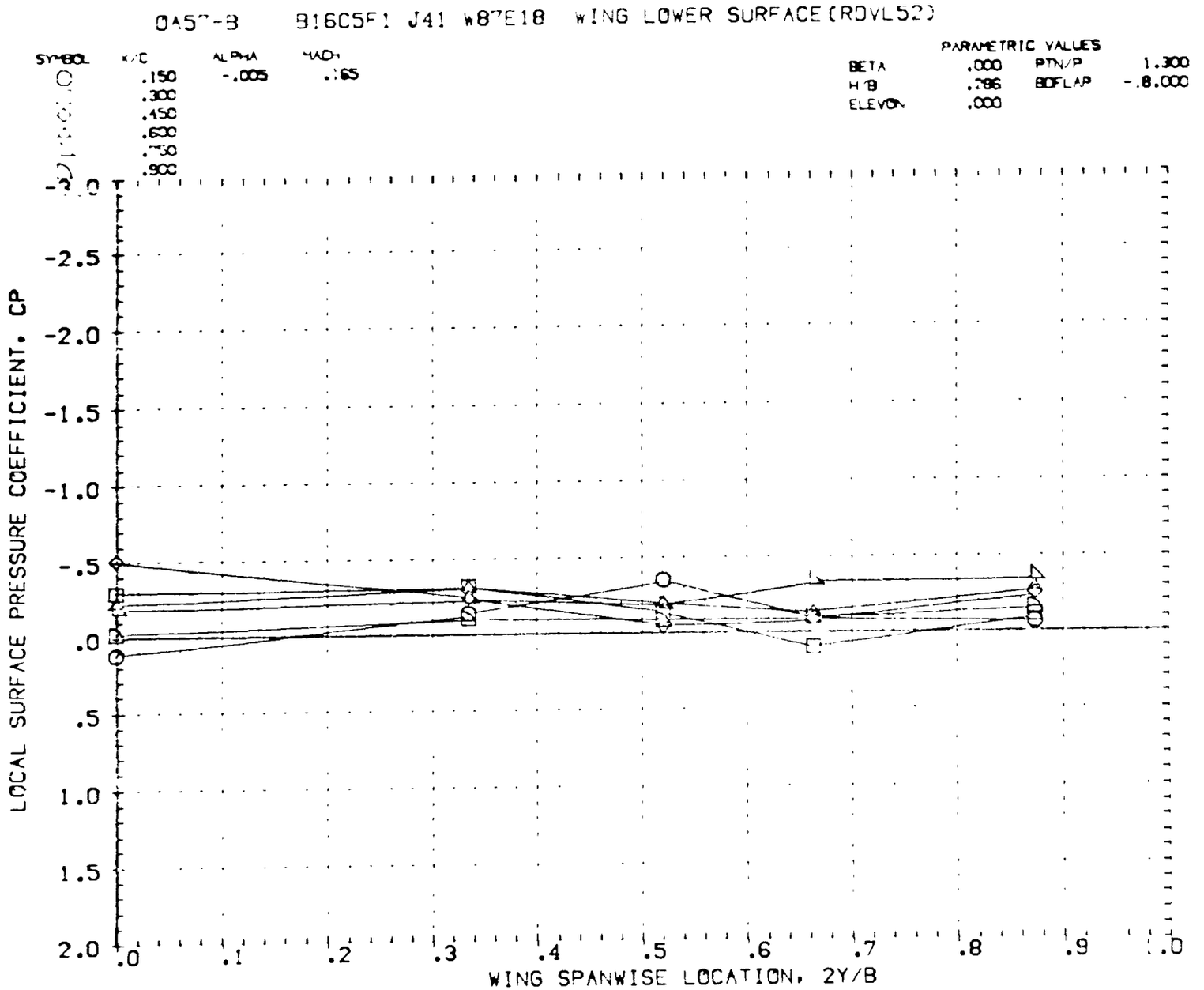


FIG 60 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVON

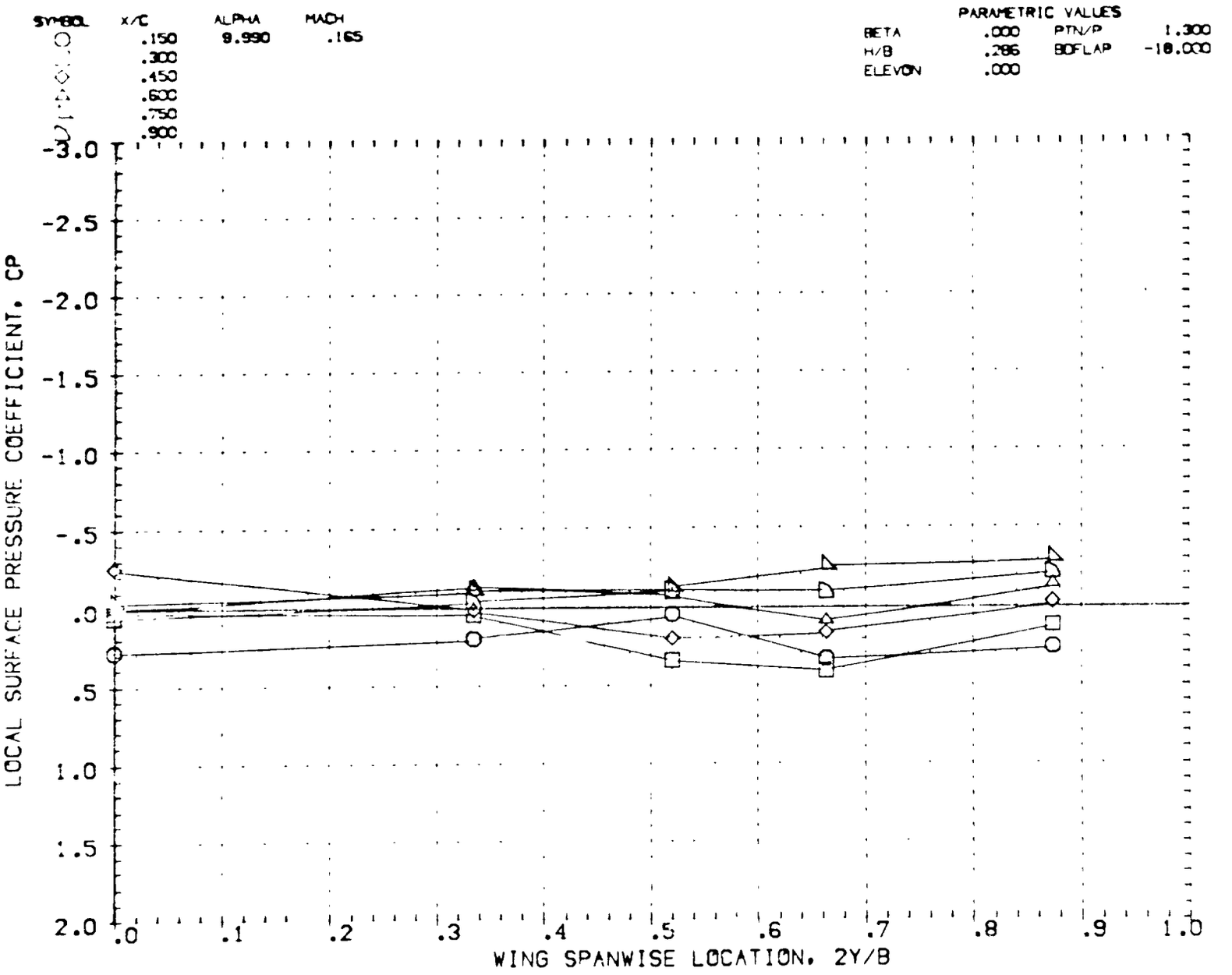


FIG 60 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J41, PTN/P=1.3, 0 ELEVON

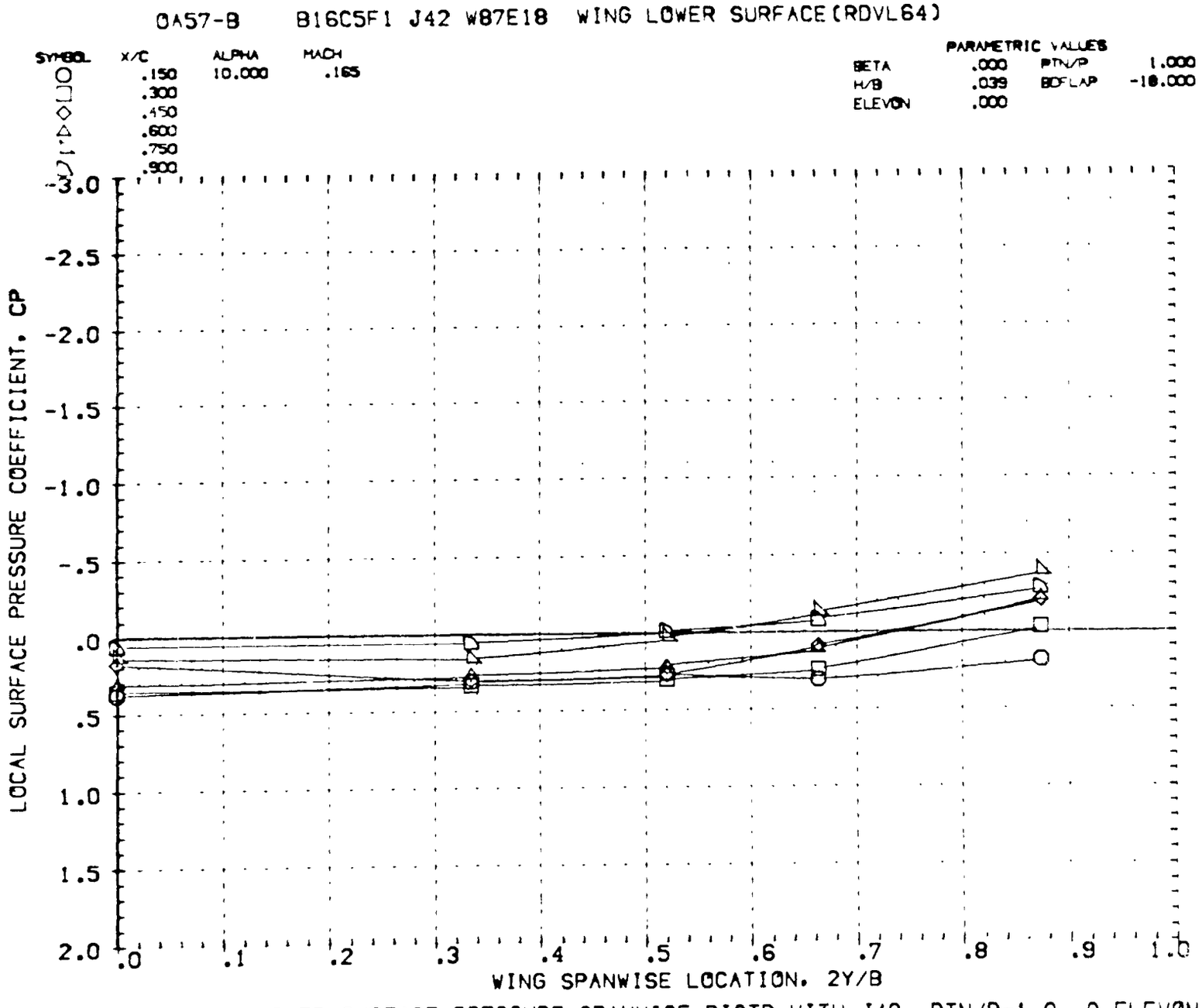


FIG 61 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

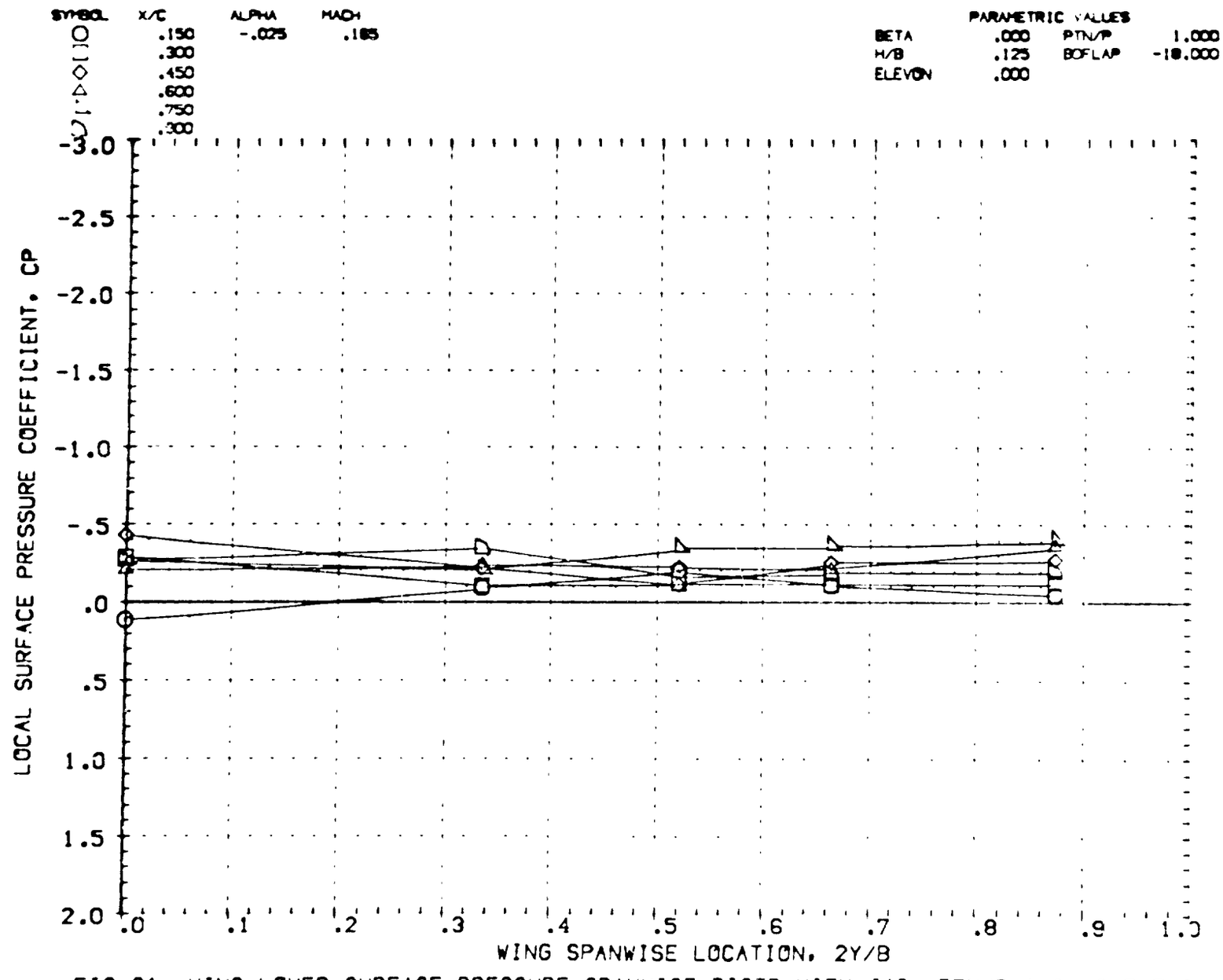


FIG 61 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

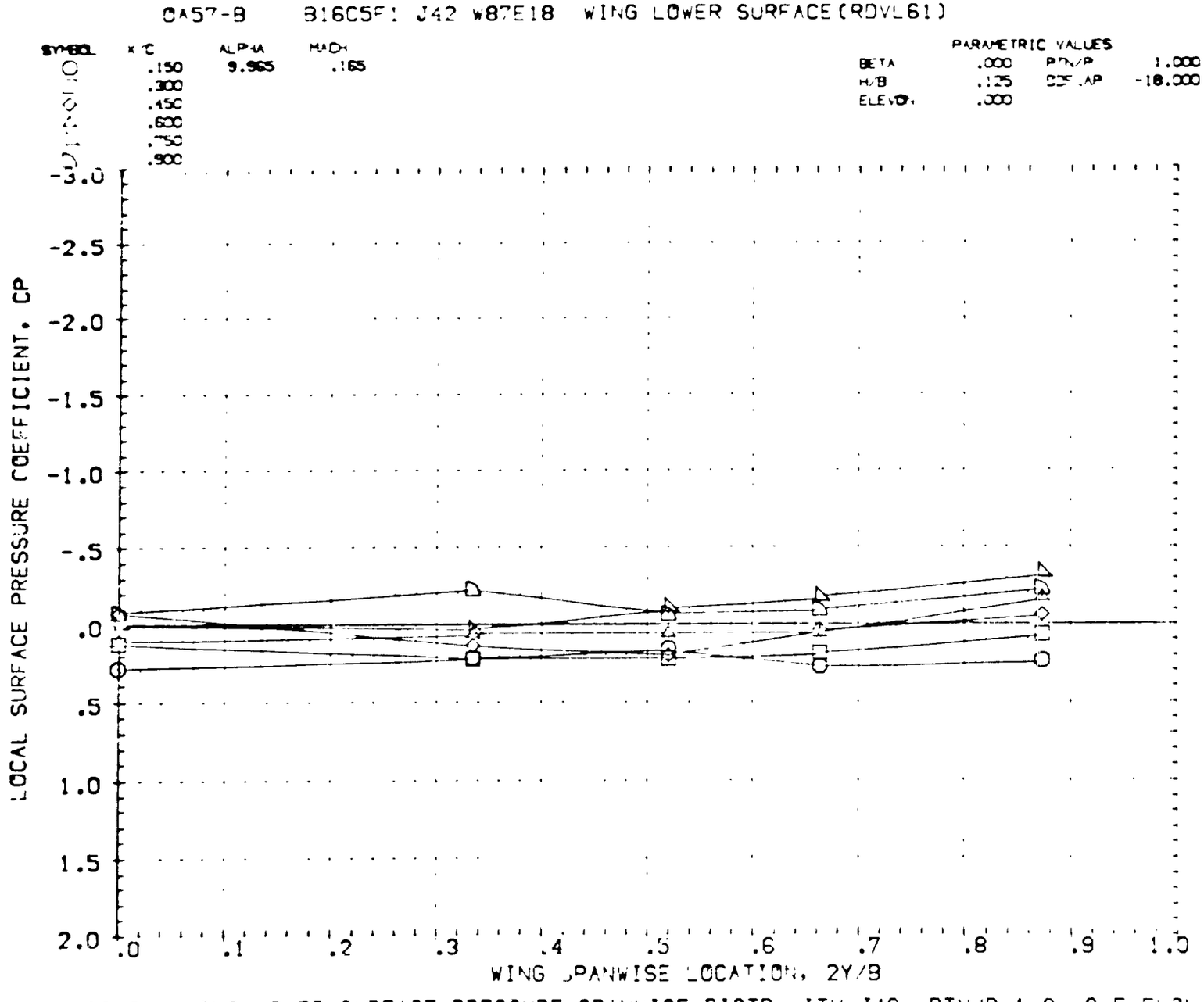


FIG 61 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

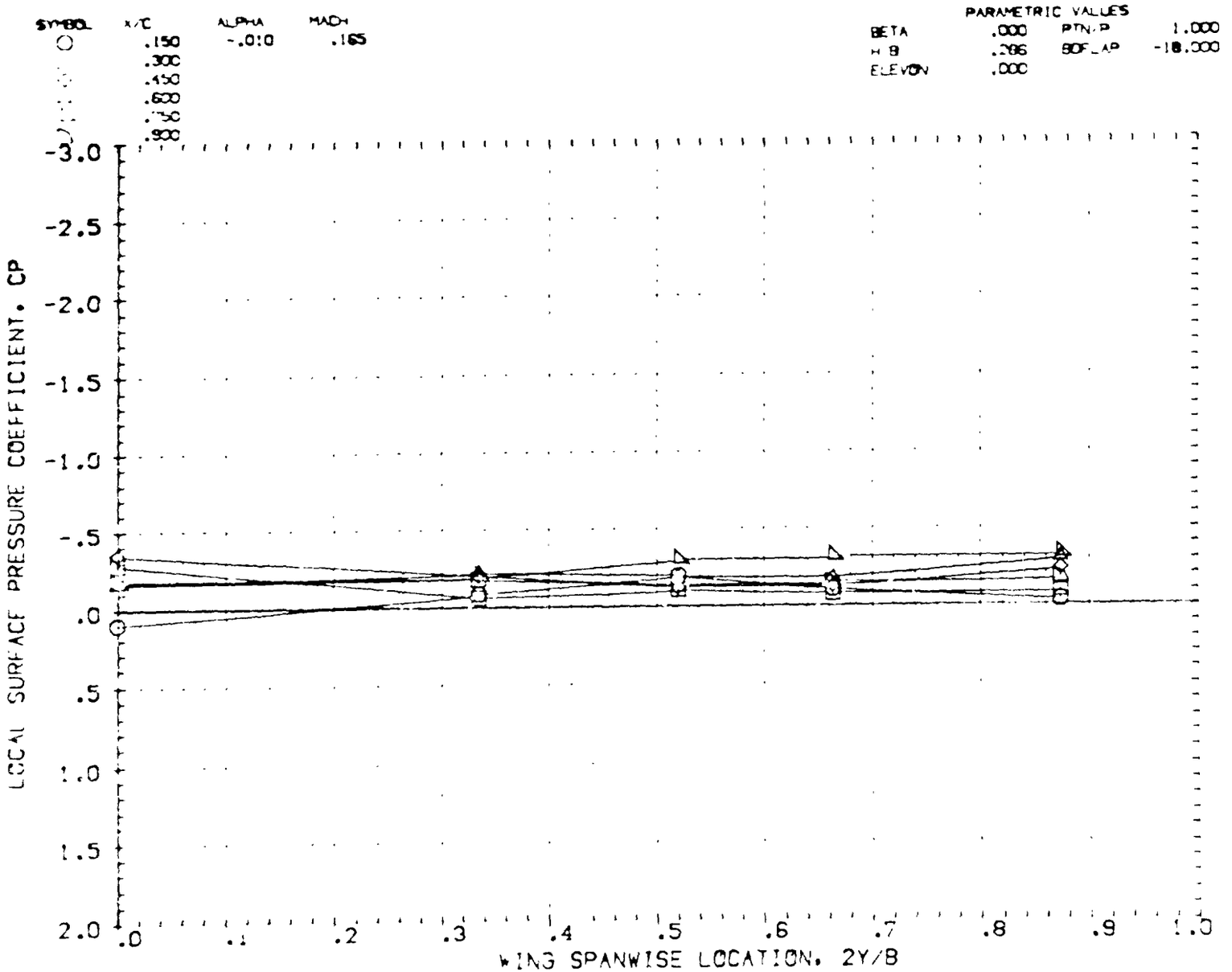


FIG 61 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

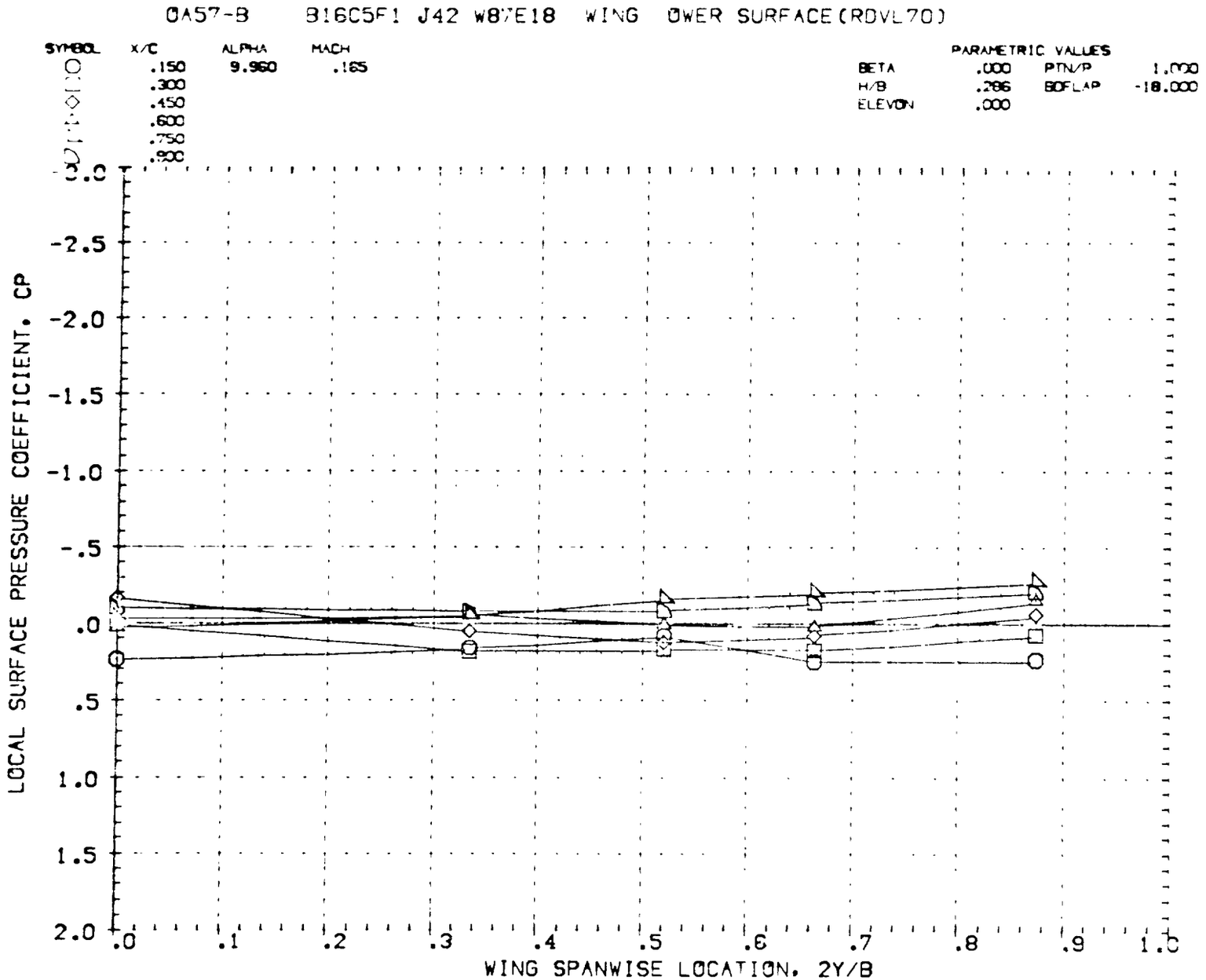


FIG 61 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.0, 0 ELEVON

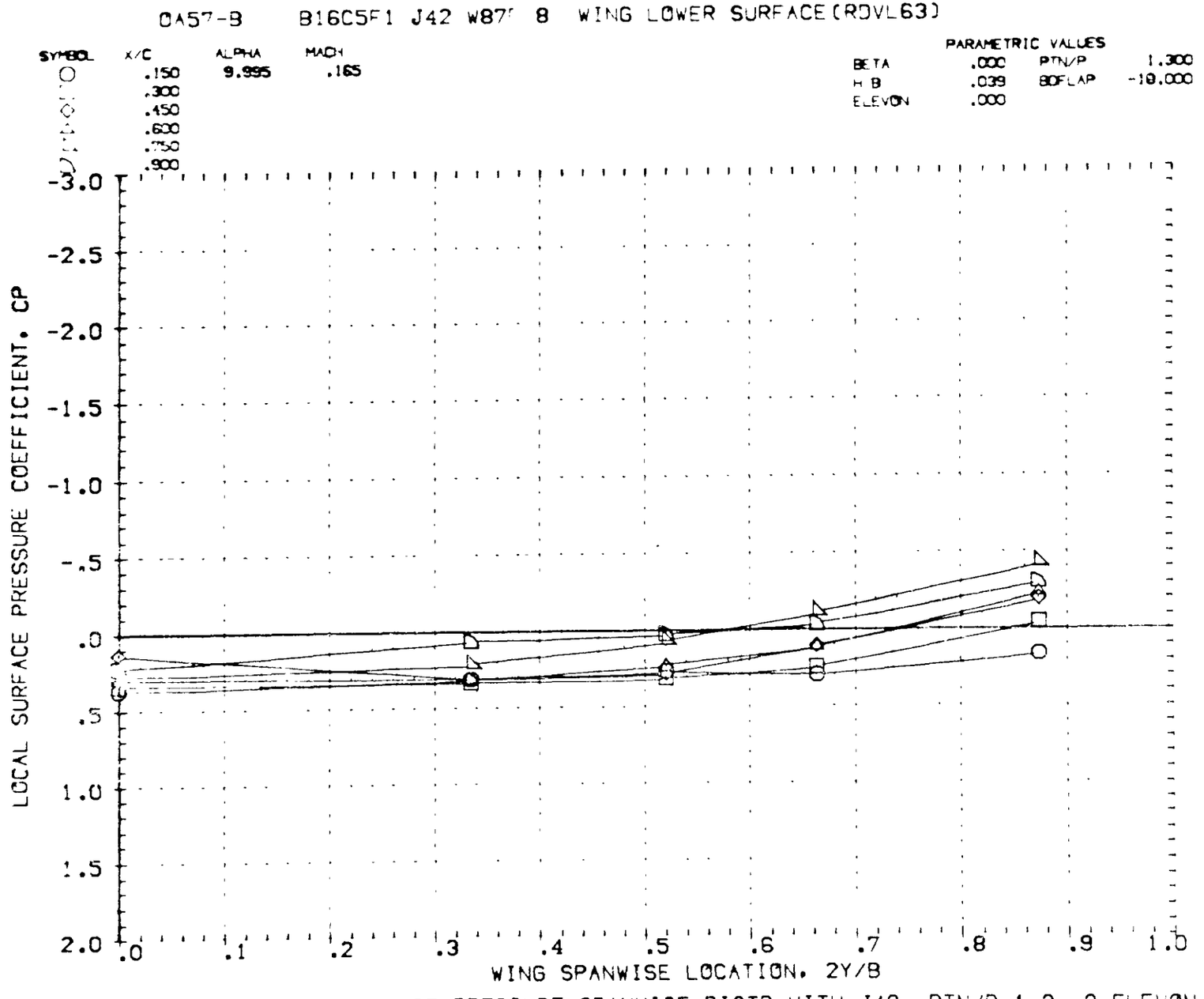


FIG 62 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

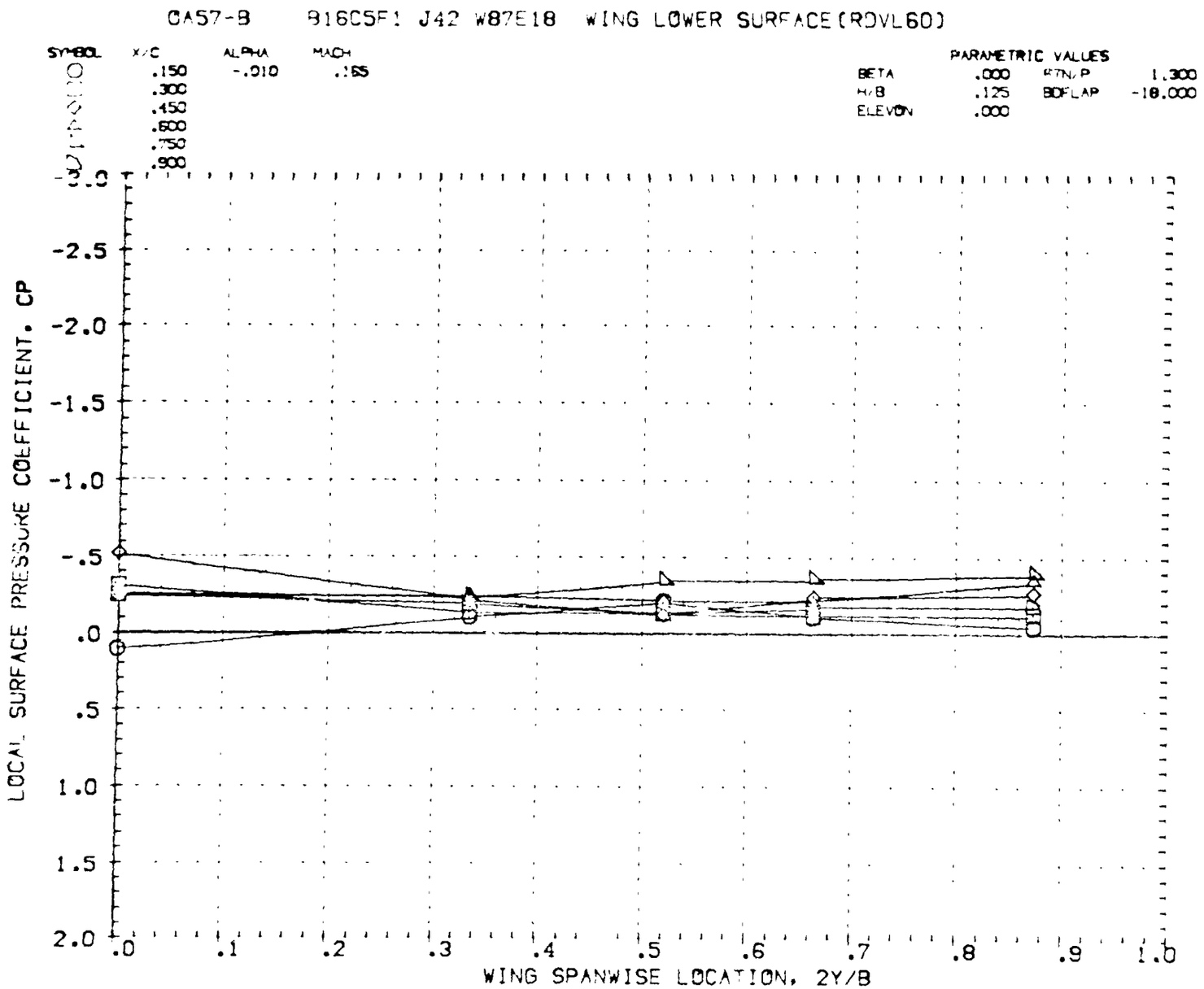


FIG 62 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

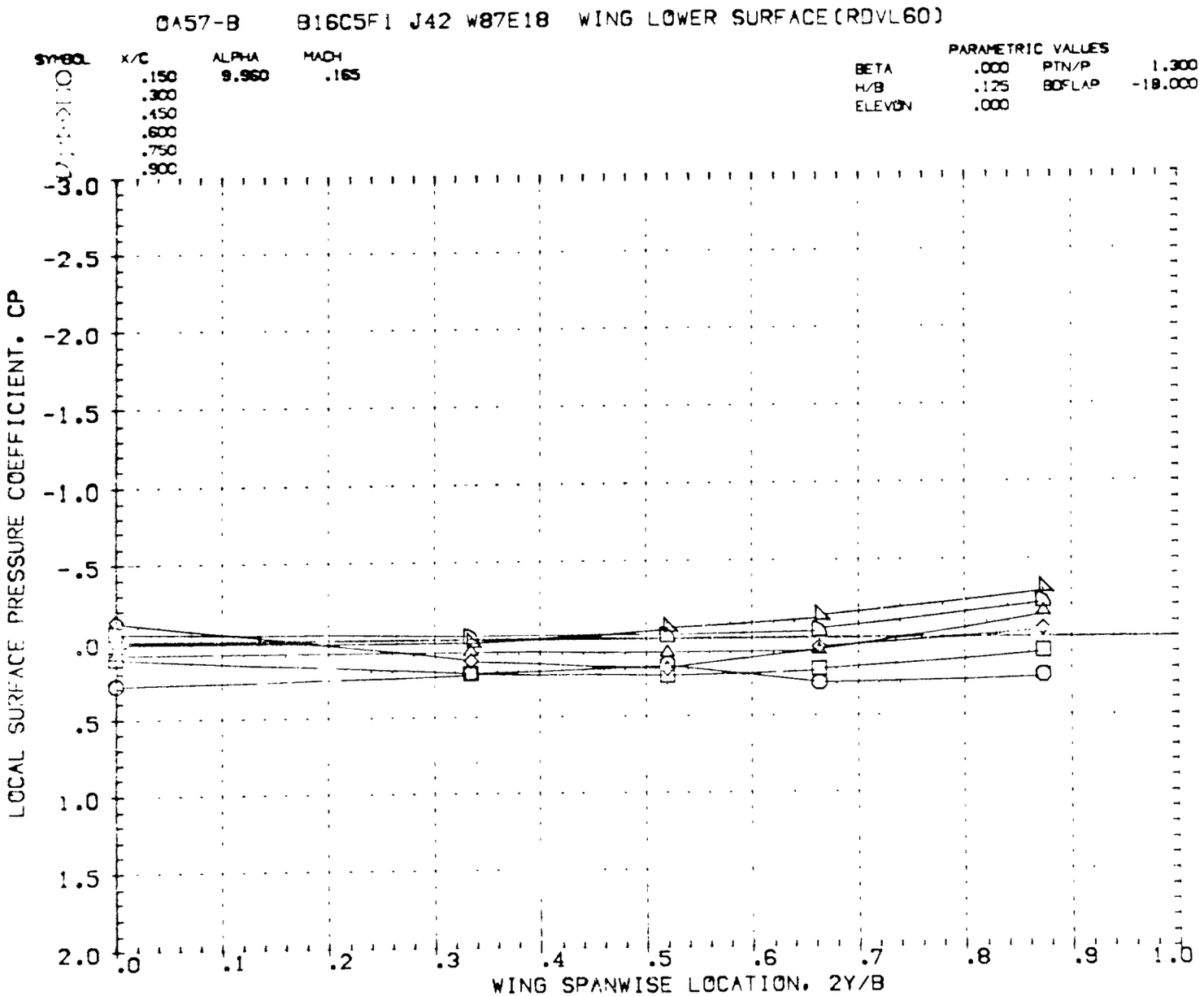


FIG 62 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

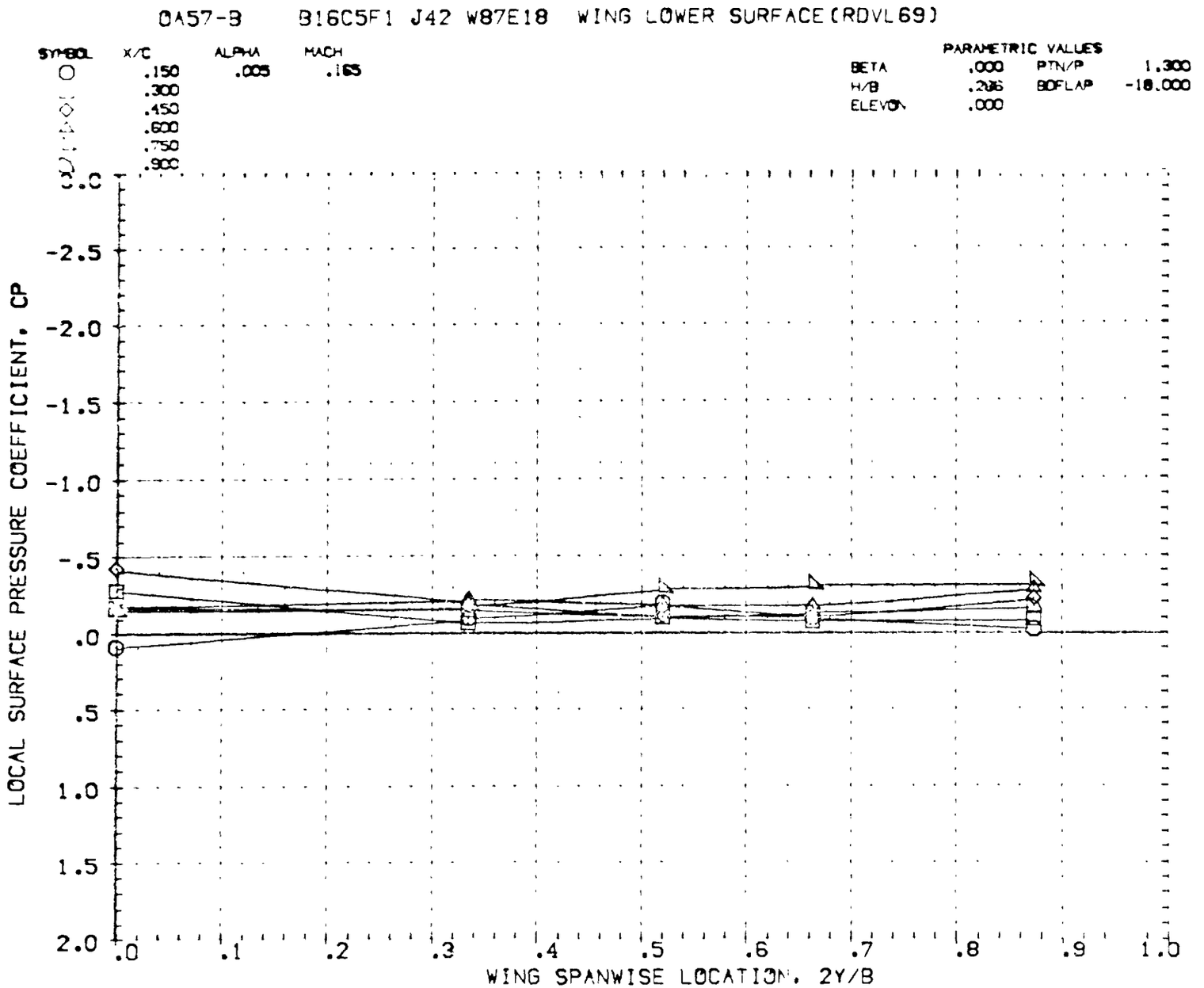


FIG 62 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.3, 0 ELEVON

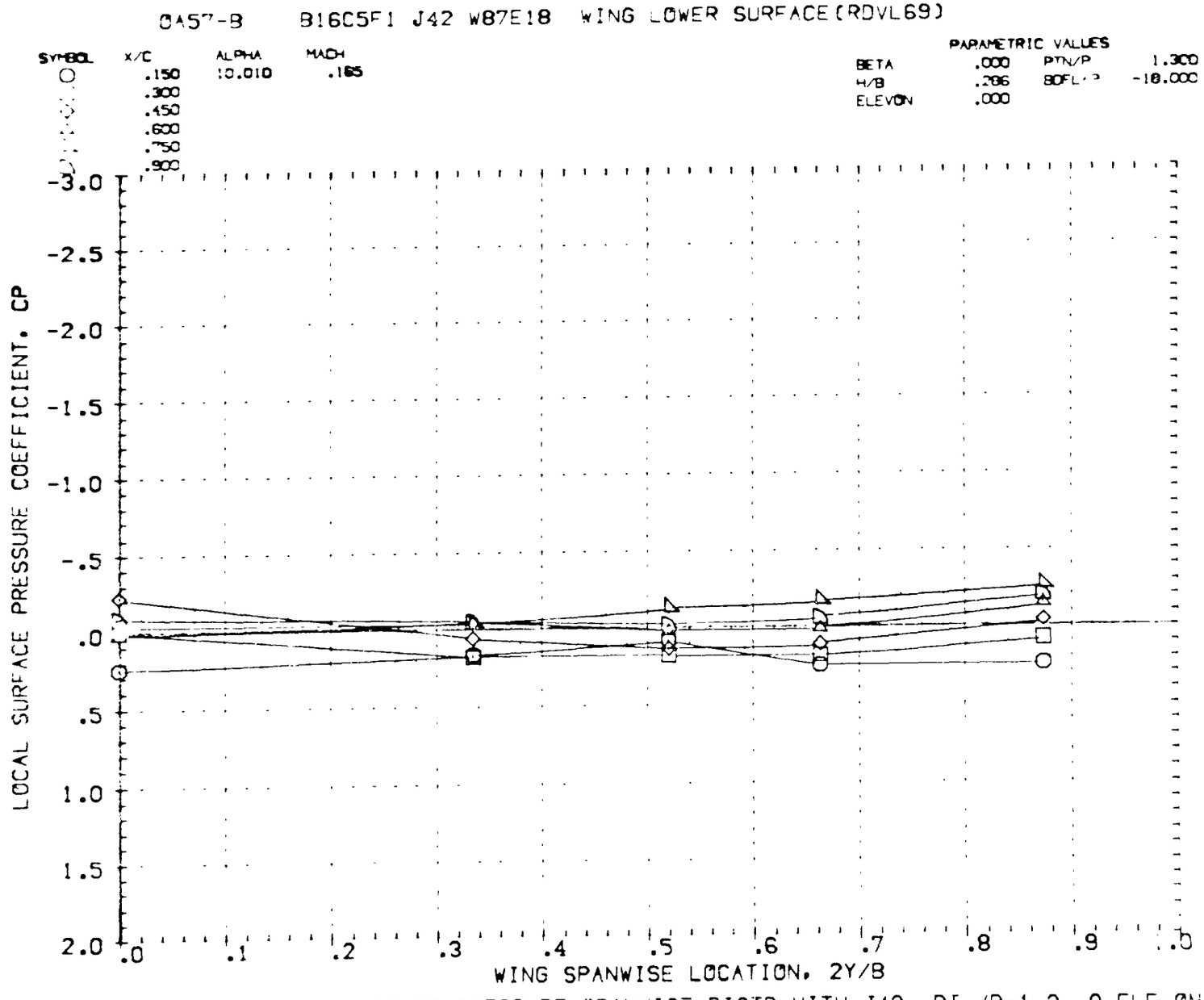


FIG 62 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PT/P=1.3, 0 ELEVON

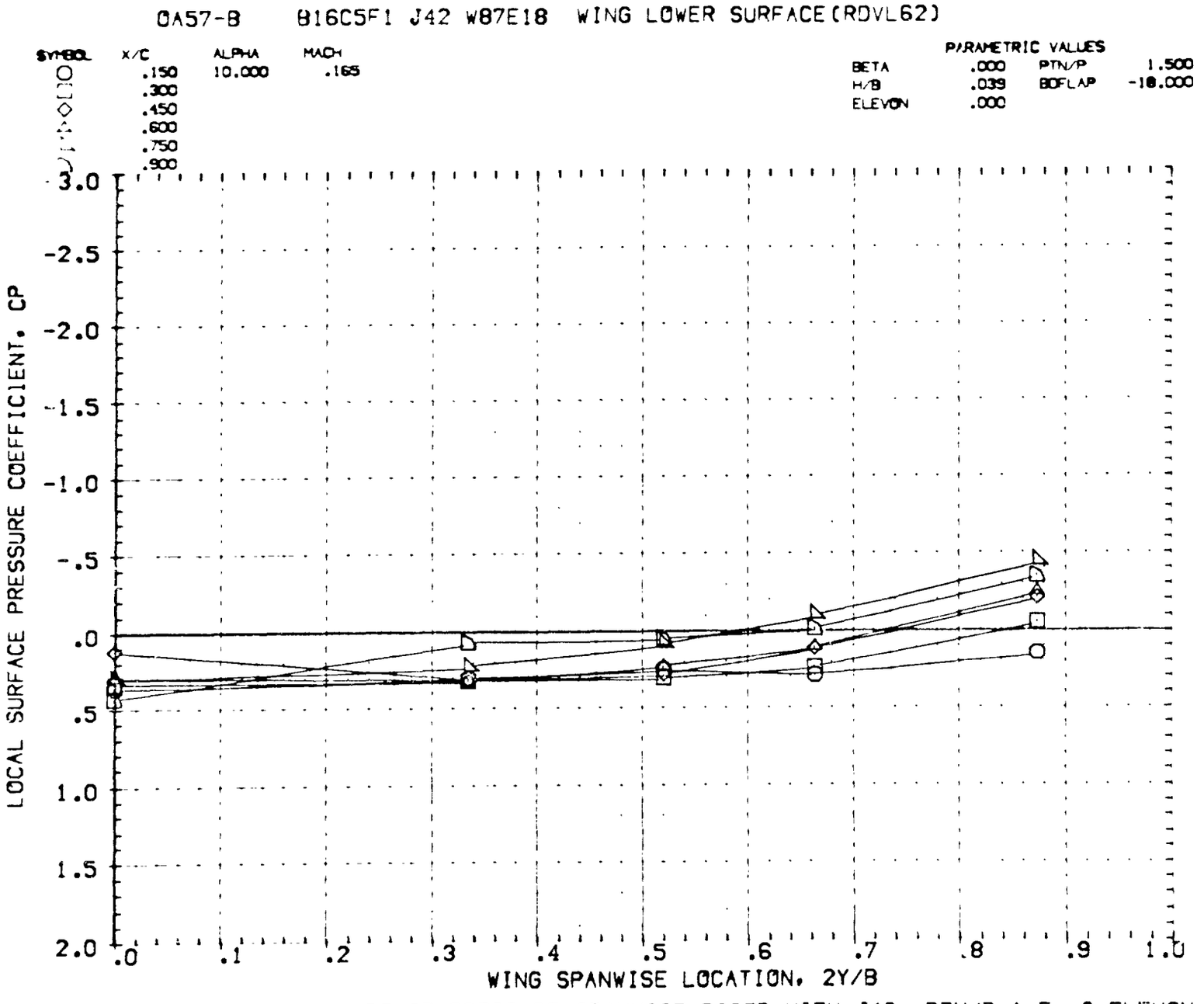


FIG 63 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

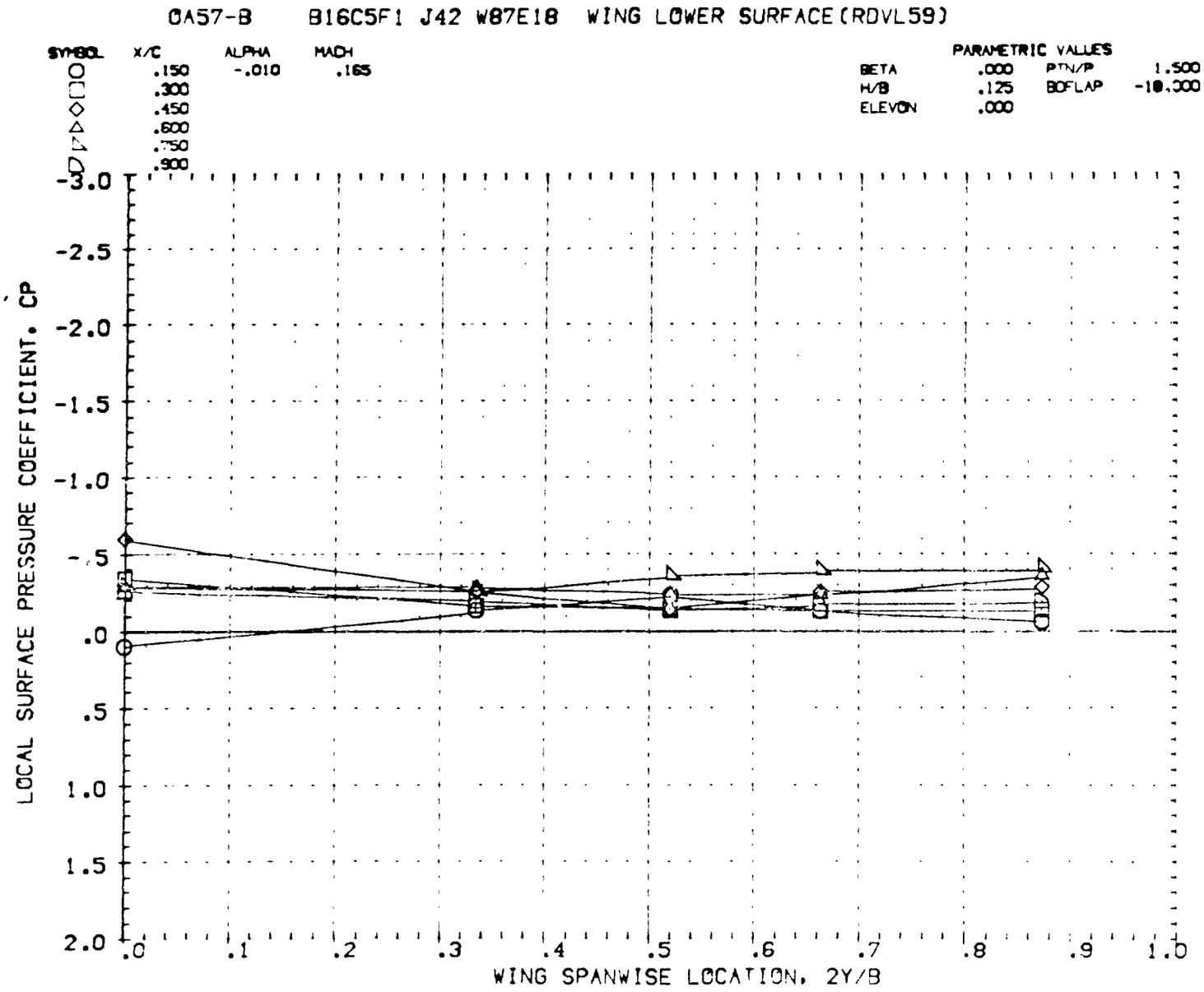


FIG 63 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

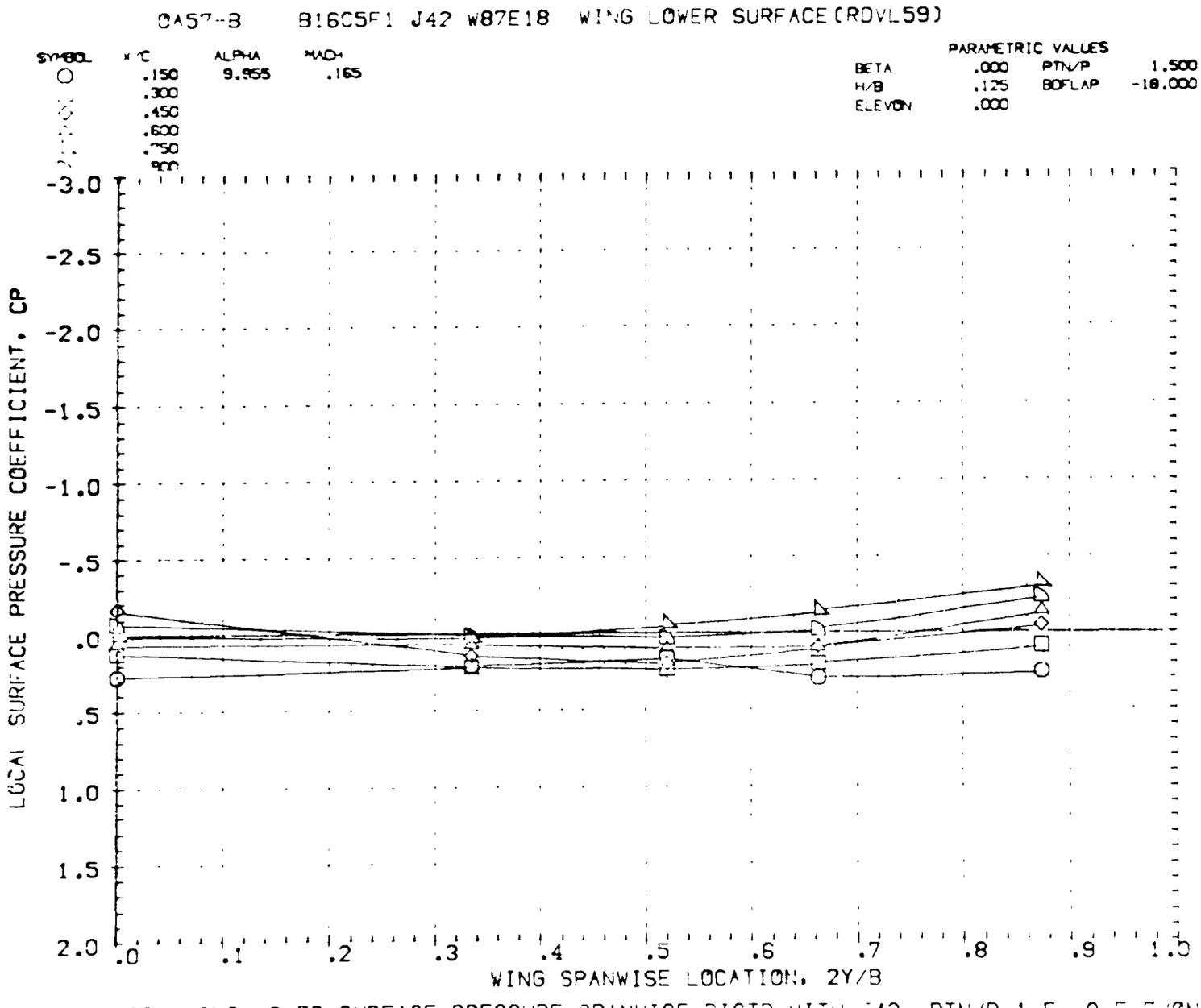


FIG 63 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

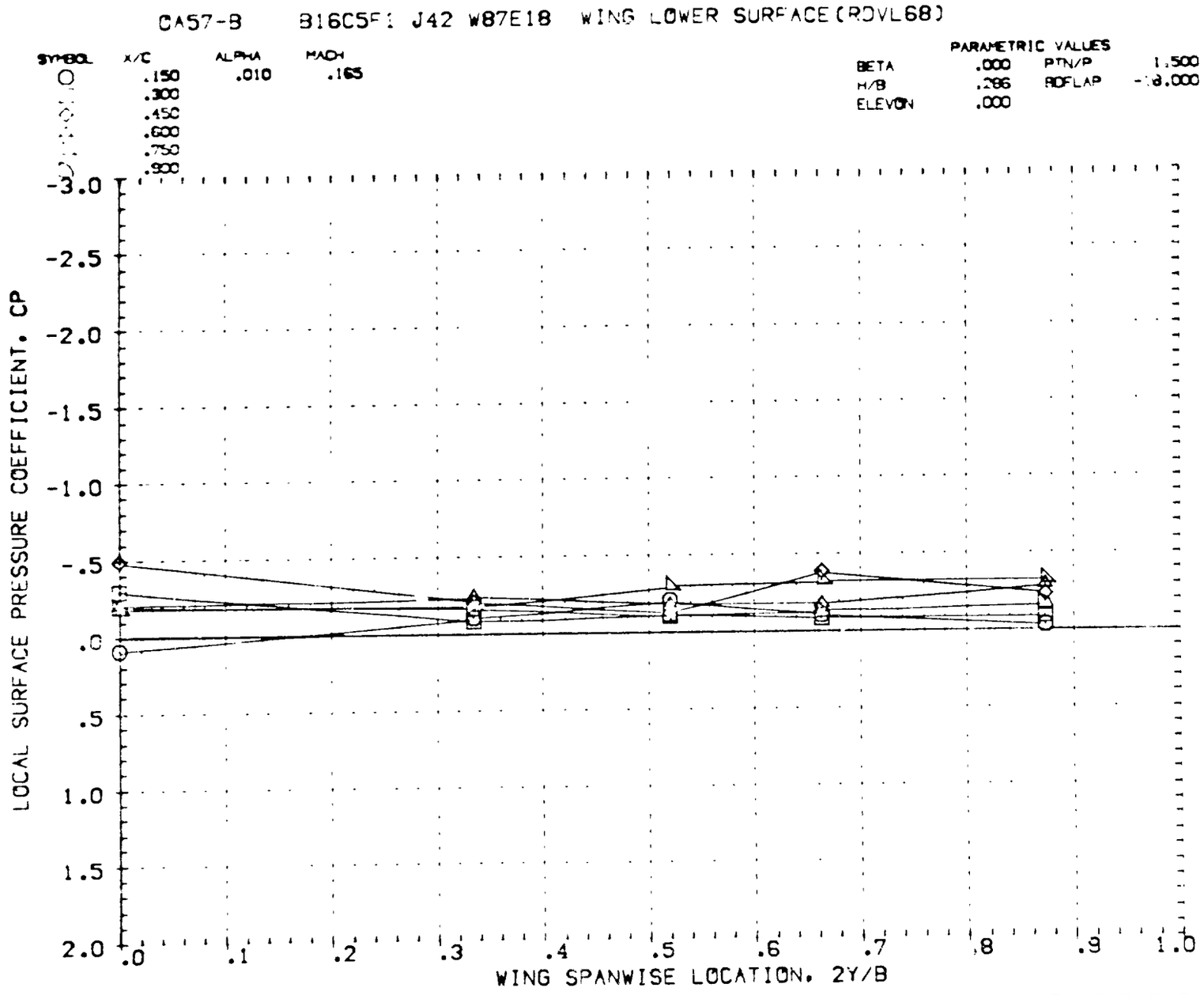


FIG 63 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

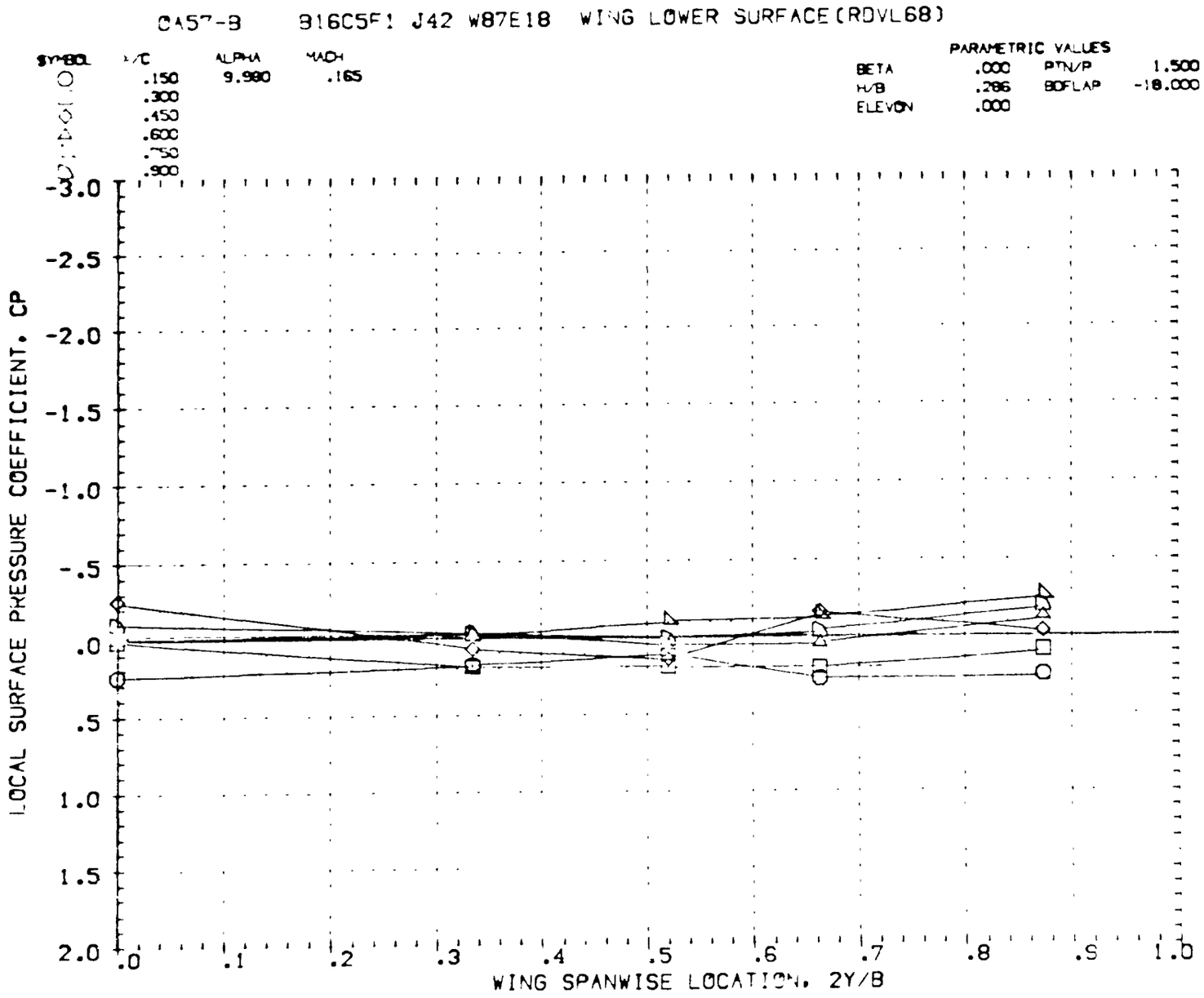


FIG 63 WING LOWER SURFACE PRESSURE SPANWISE DISTR WITH J42, PTN/P=1.5, 0 ELEVON

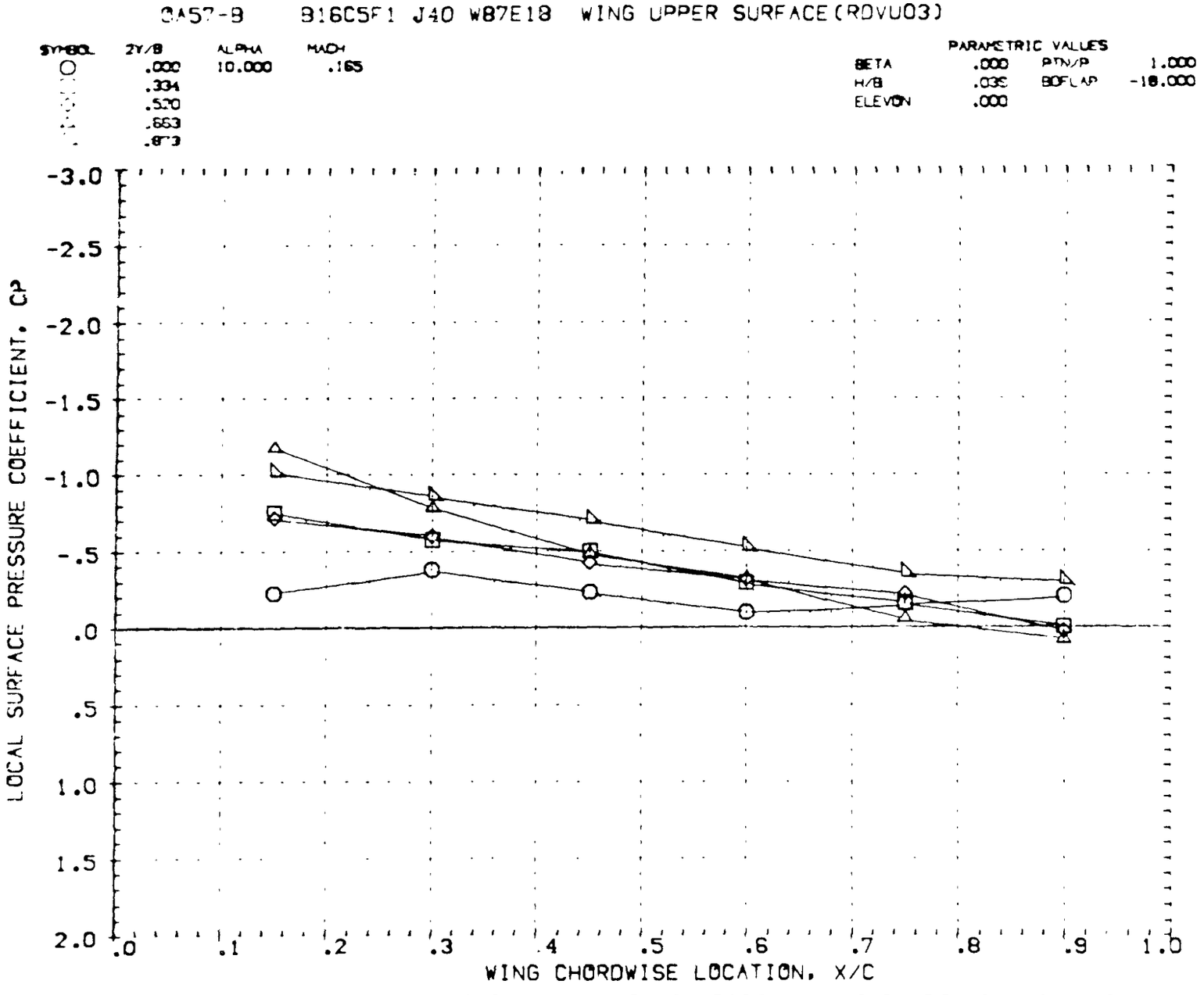


FIG 64 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

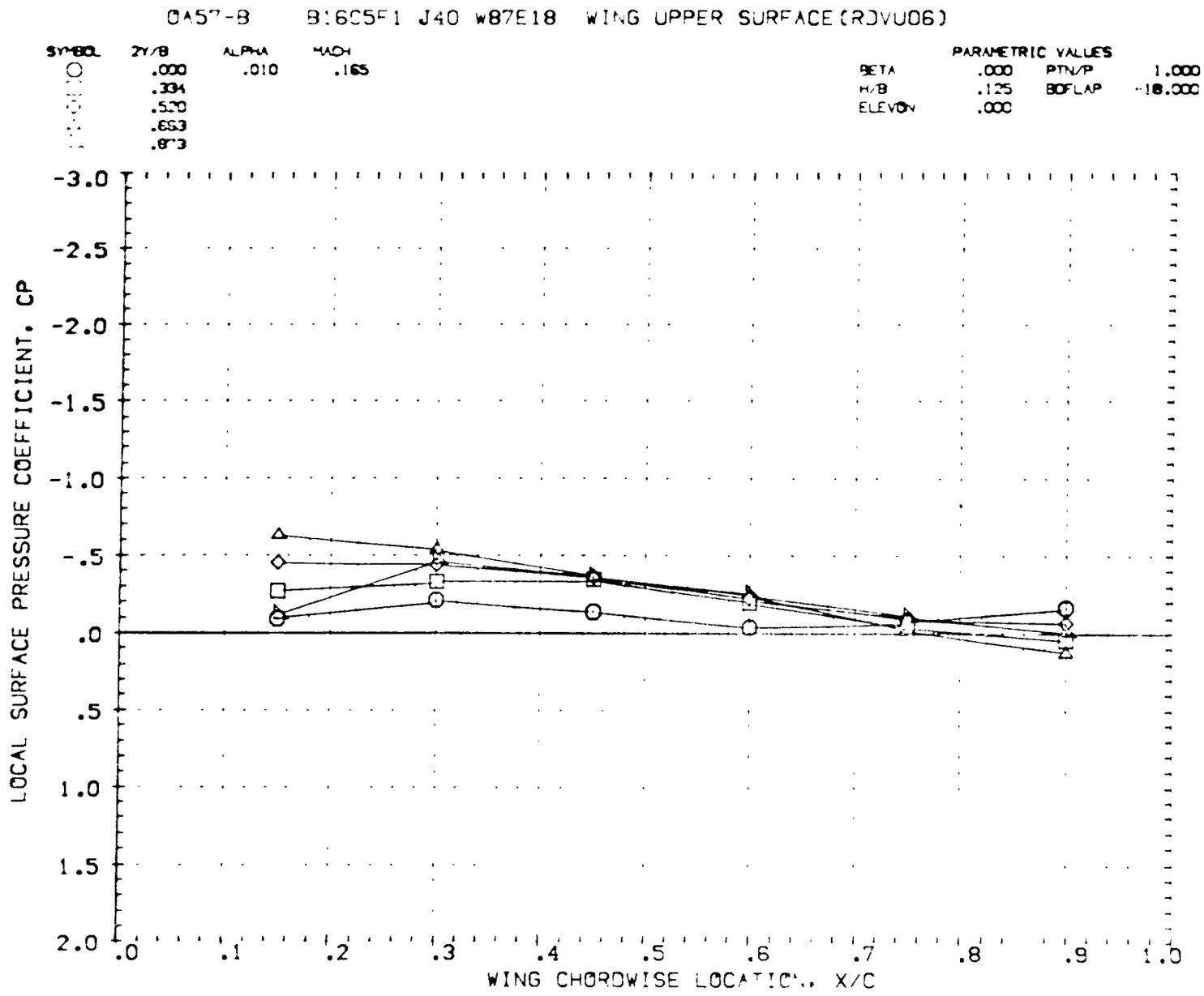


FIG 64 WING UPPER SURFACE PRESSURE CHORDWISE DIST[illegible]H J40, PTN/P=1.0, 0 ELEVON

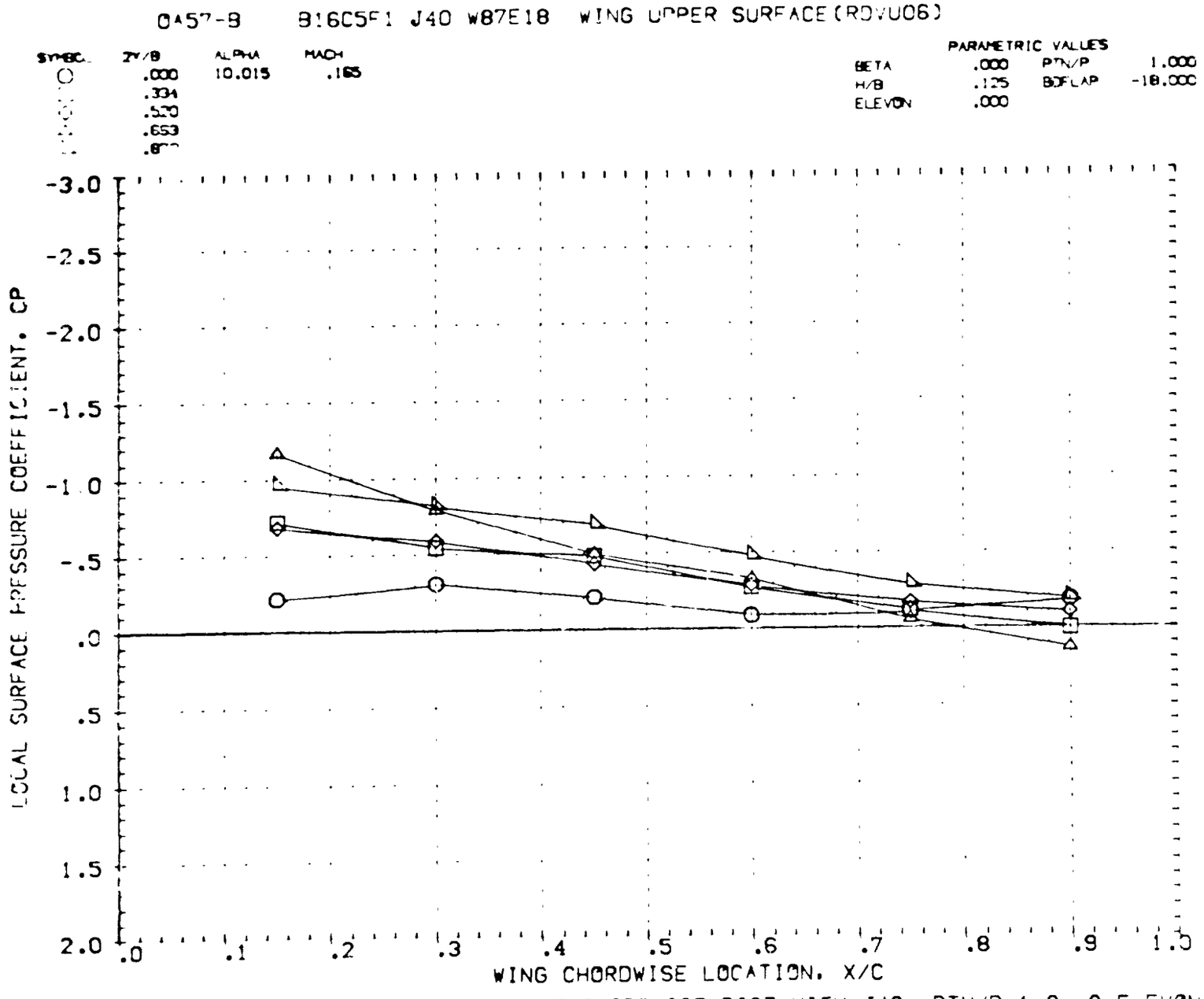


FIG 64 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

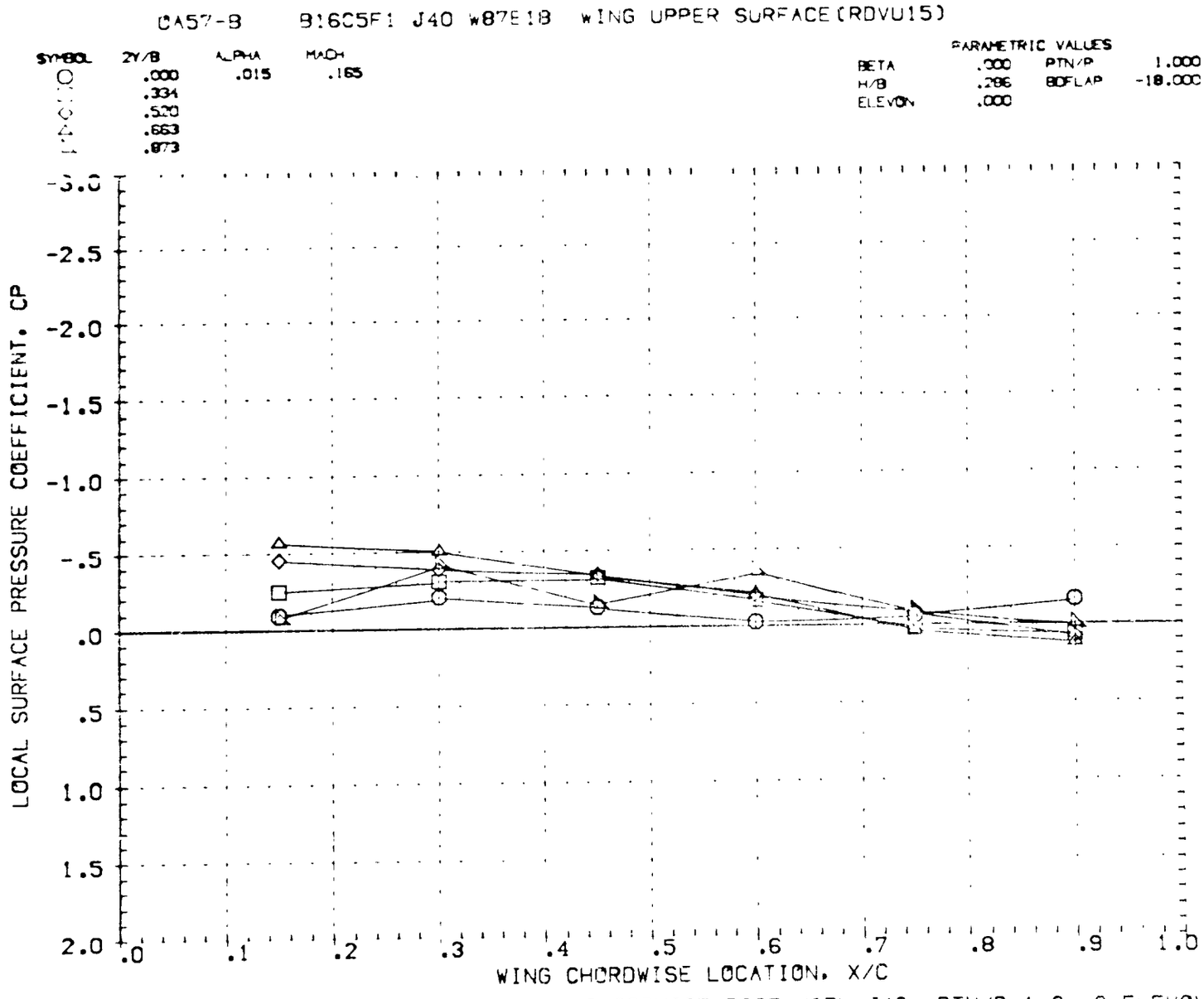


FIG 64 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

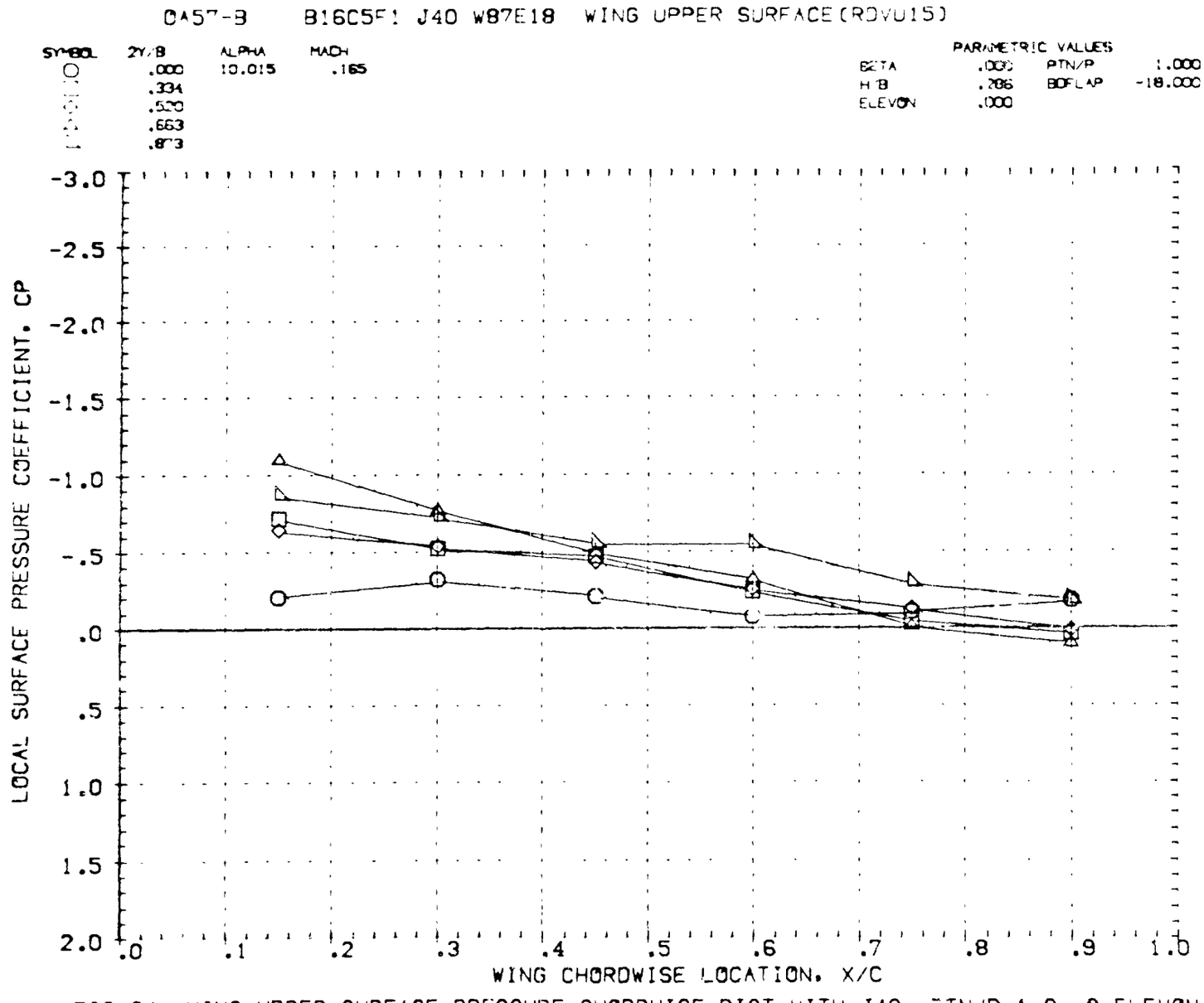


FIG 64 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

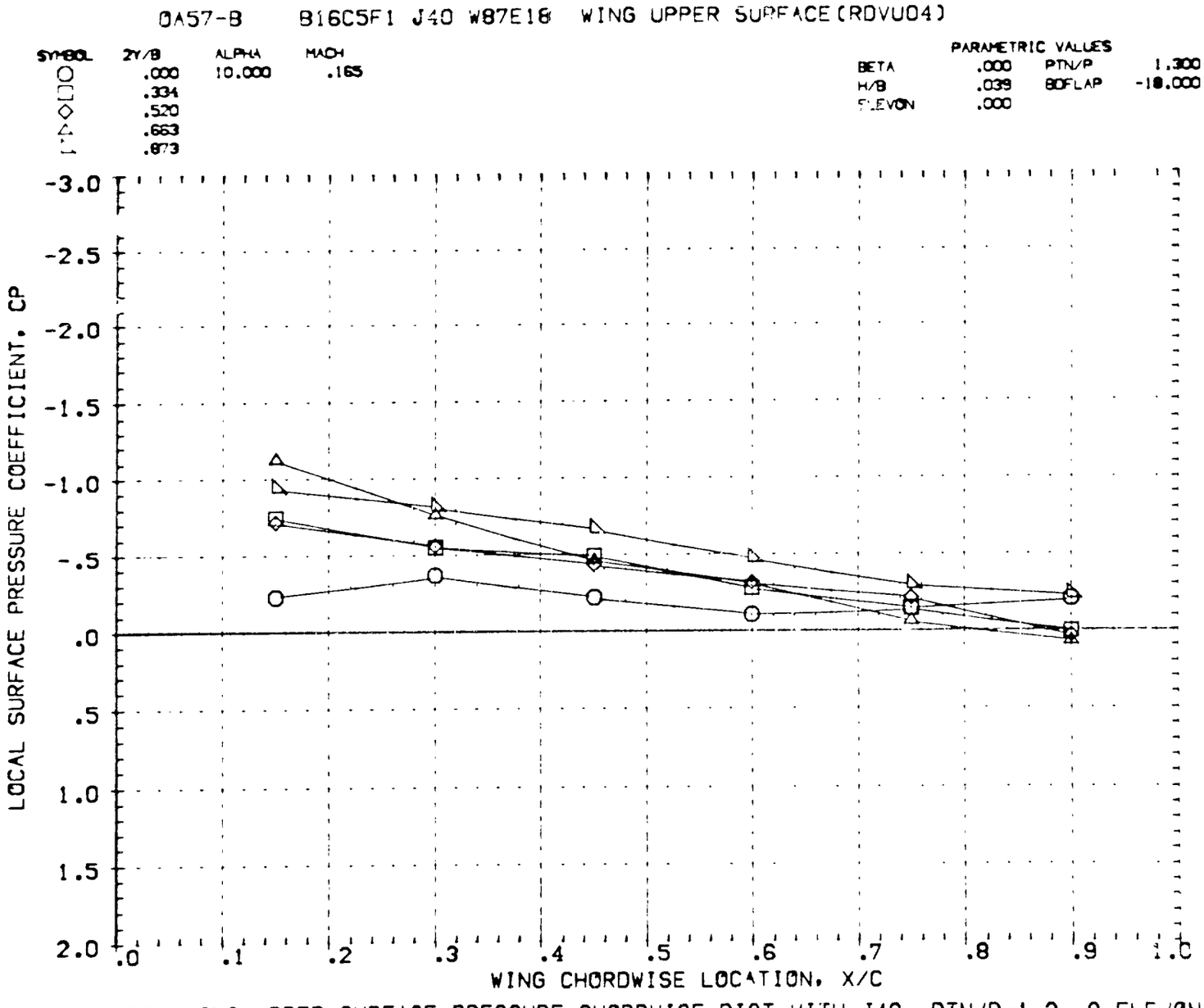


FIG 65 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

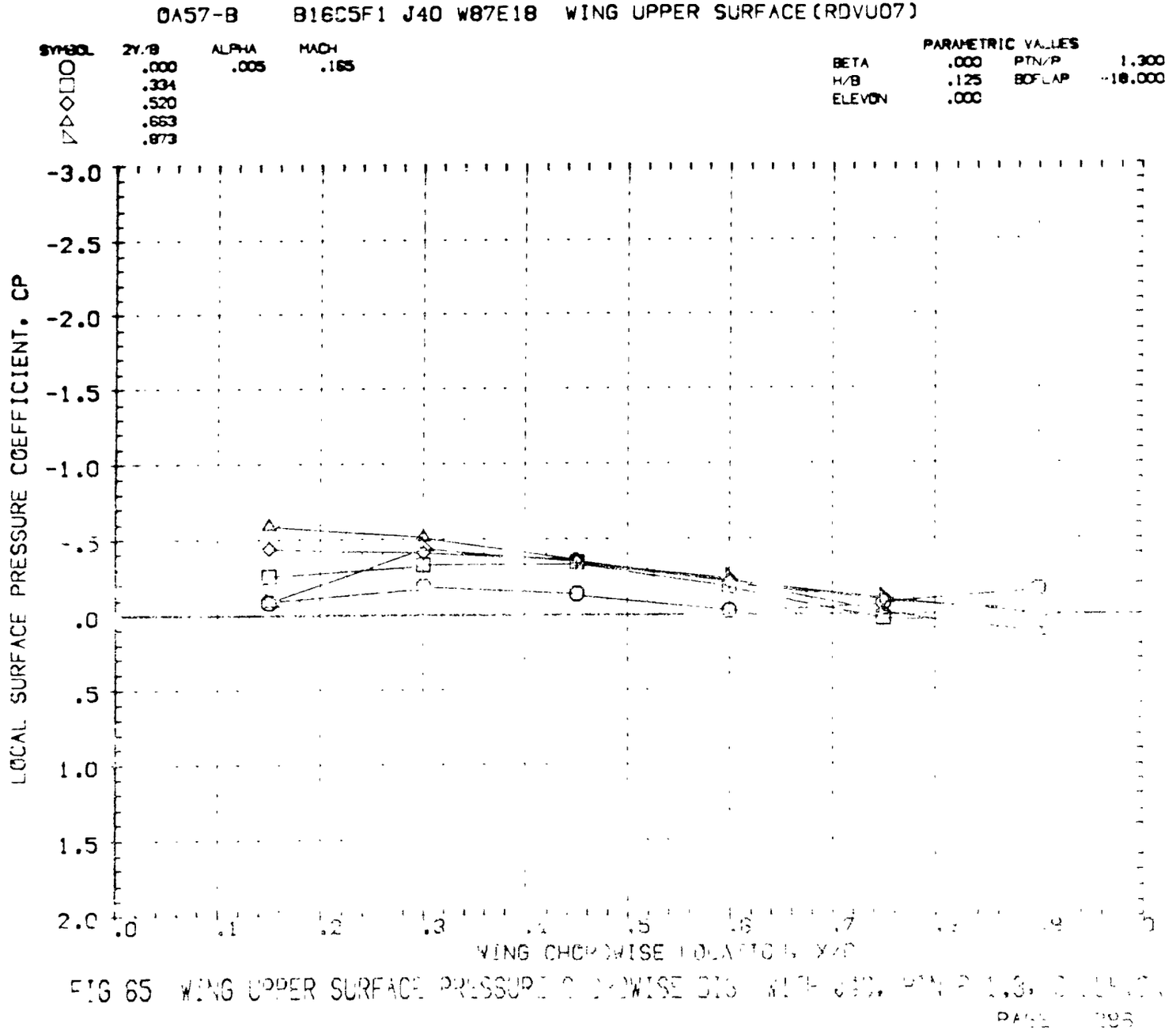


FIG 65 WING UPPER SURFACE PRESSURE CHORDWISE DIS

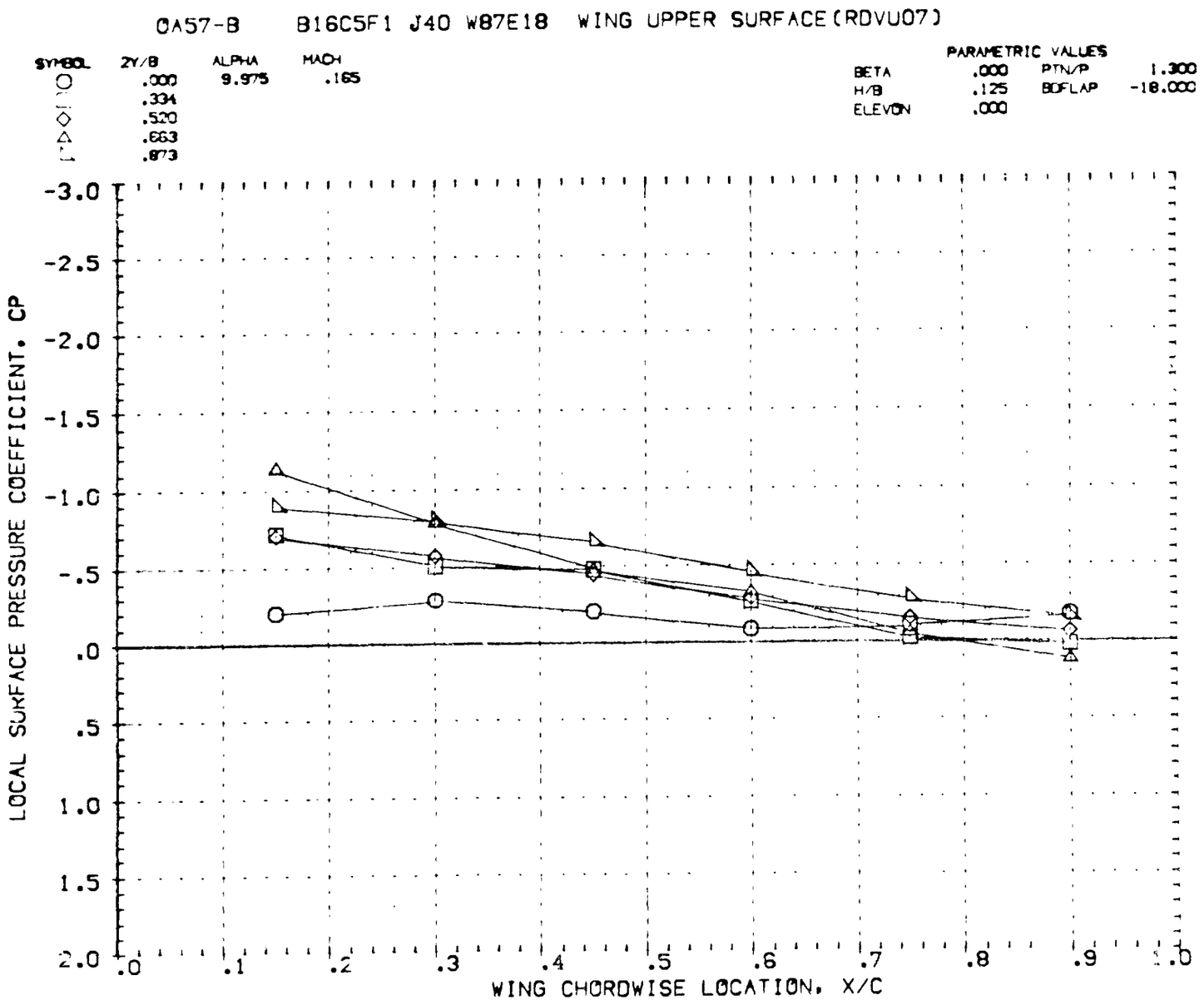


FIG 65 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

0A57-B B16C5F1 J40 W87E18 WING UPPER SURFACE (RDVU17)

SYMBOL	2Y/B	ALPHA	MACH
△	.000	.005	.165
◇	.334		
□	.520		
○	.683		
○	.873		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.300
H/B	.286	BOFLAP	-18.000
ELEVON	.000		

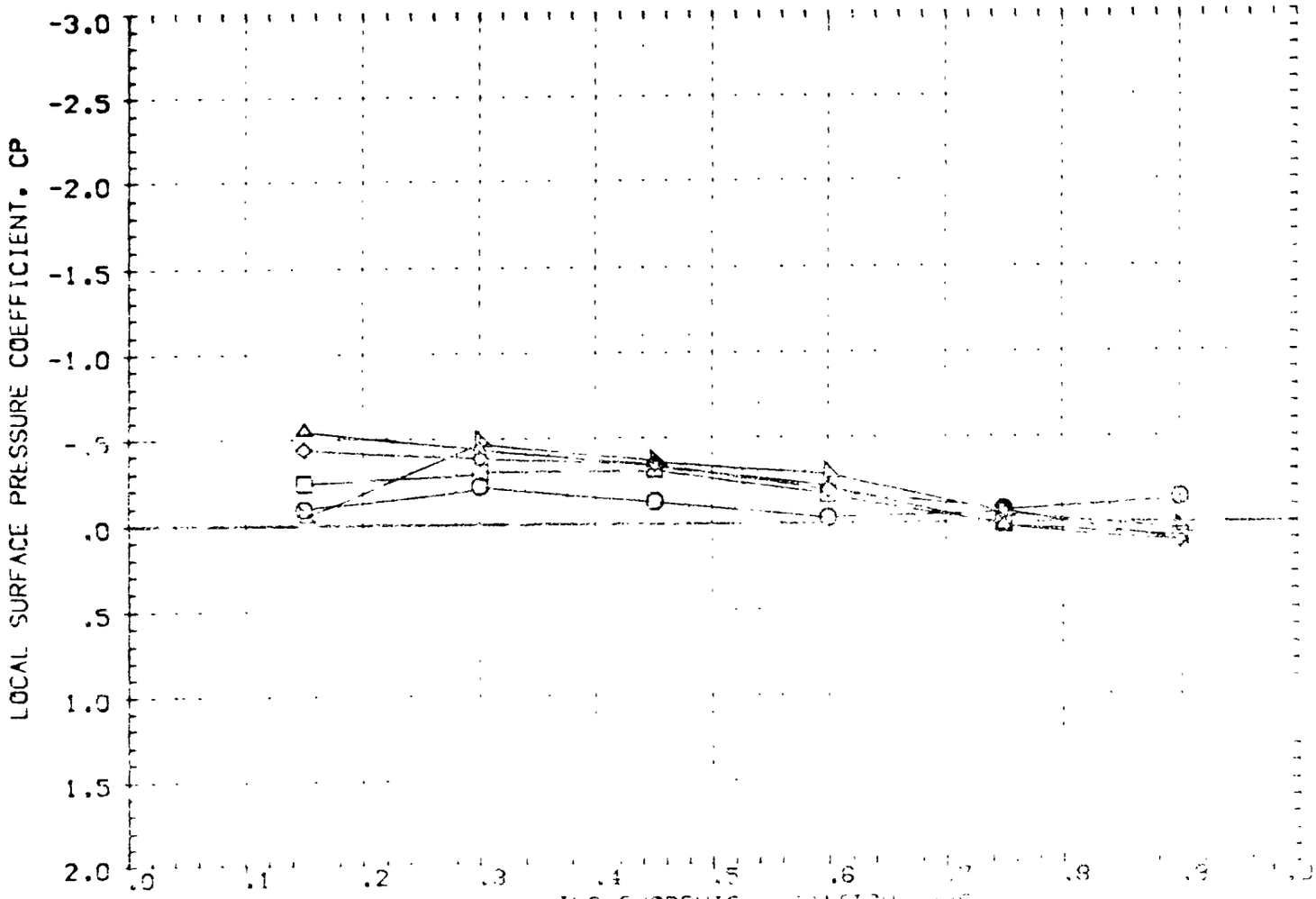


FIG 65 WING UPPER SURFACE PRESSURE CHORDWISE D[illegible]

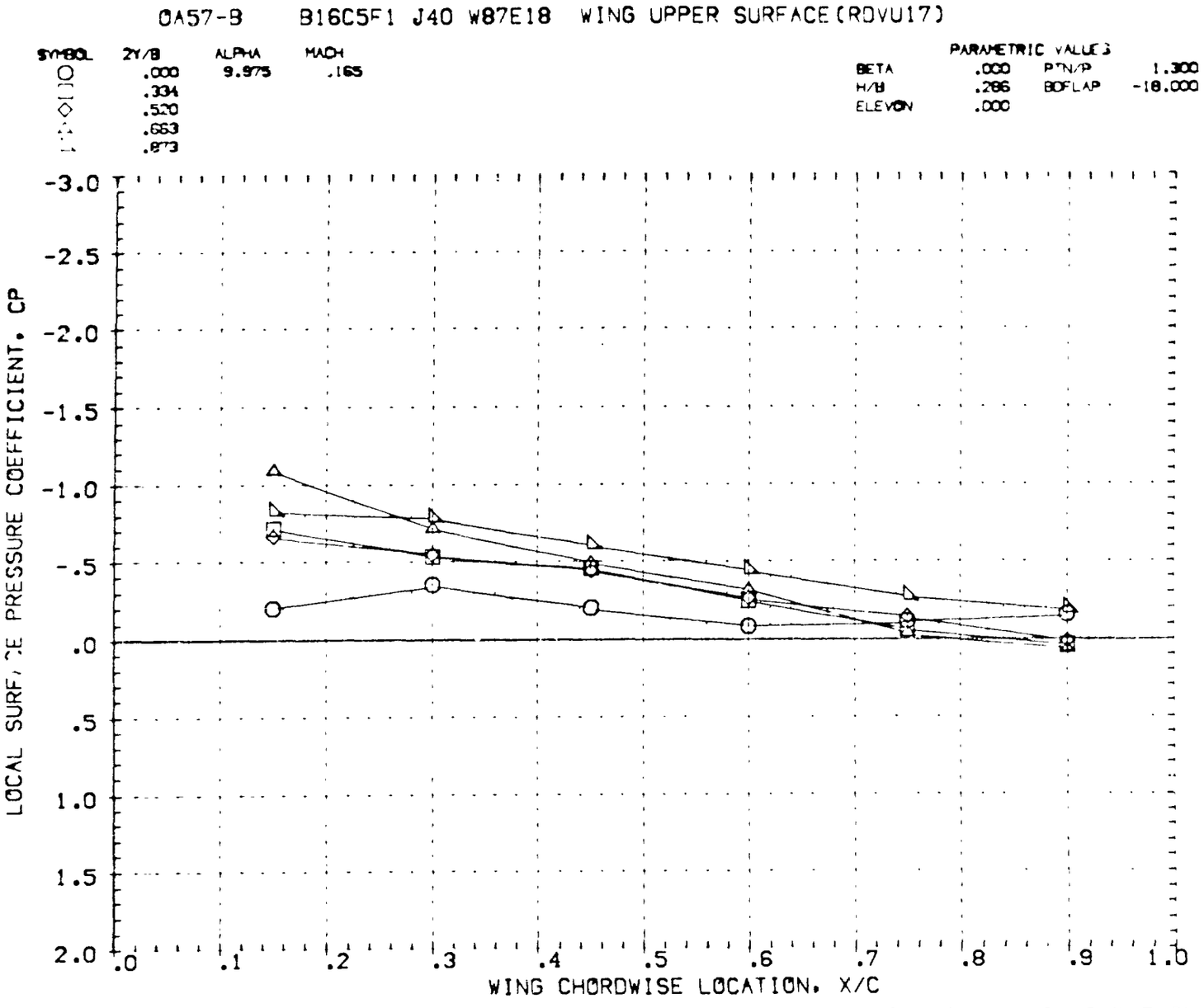


FIG 65 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

0A57-B B16C5F1 J40 W87E18 WING UPPER SURFACE (RDVUD5)

SYMBOL	2Y/B
○	.000
□	.334
◇	.520
△	.663
▷	.873

ALPHA 9.990 MACH .165

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H/B	.039	BOFLAP	-10.000
ELEVON	.000		

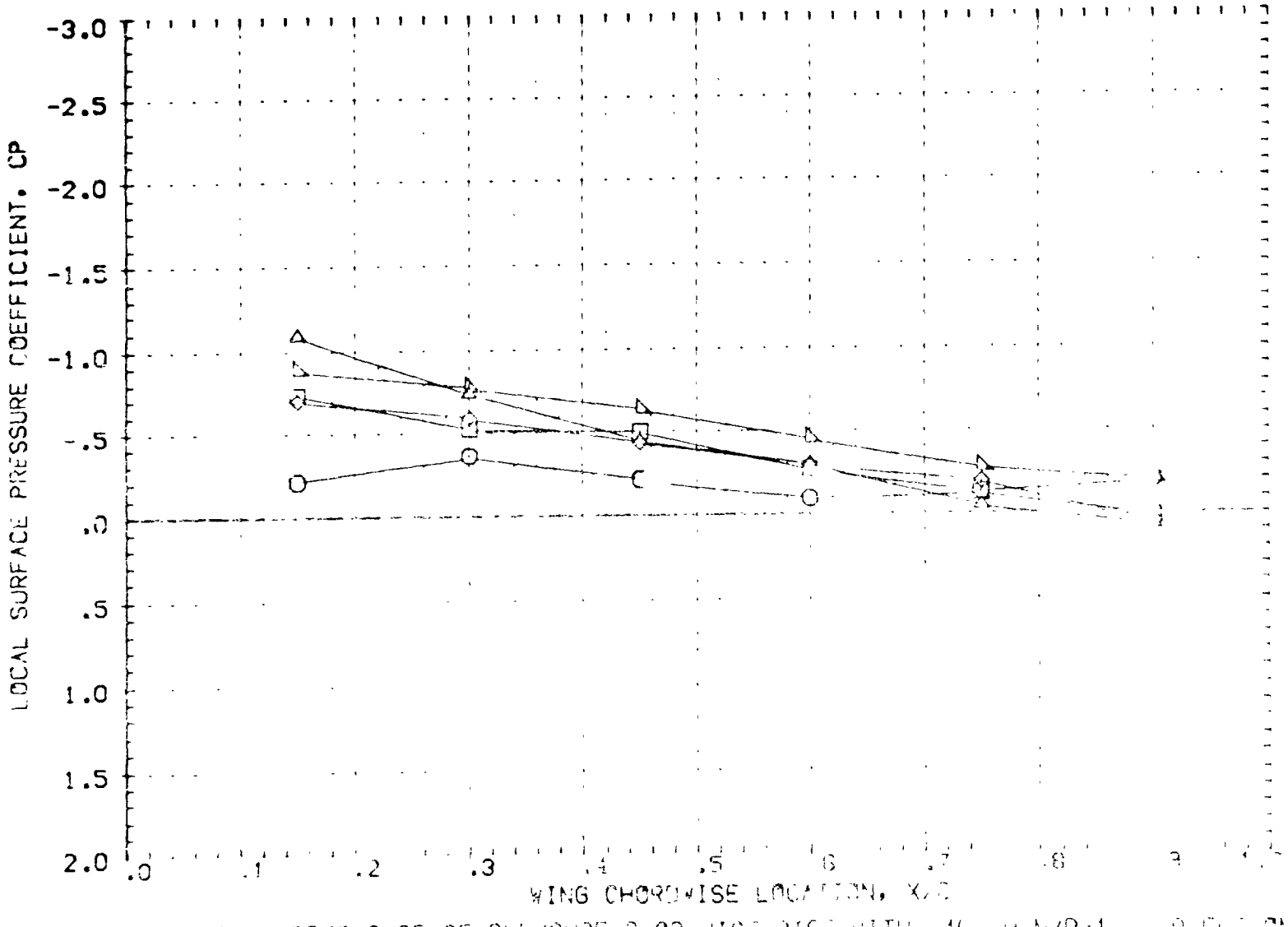


FIG 66 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH [illegible]

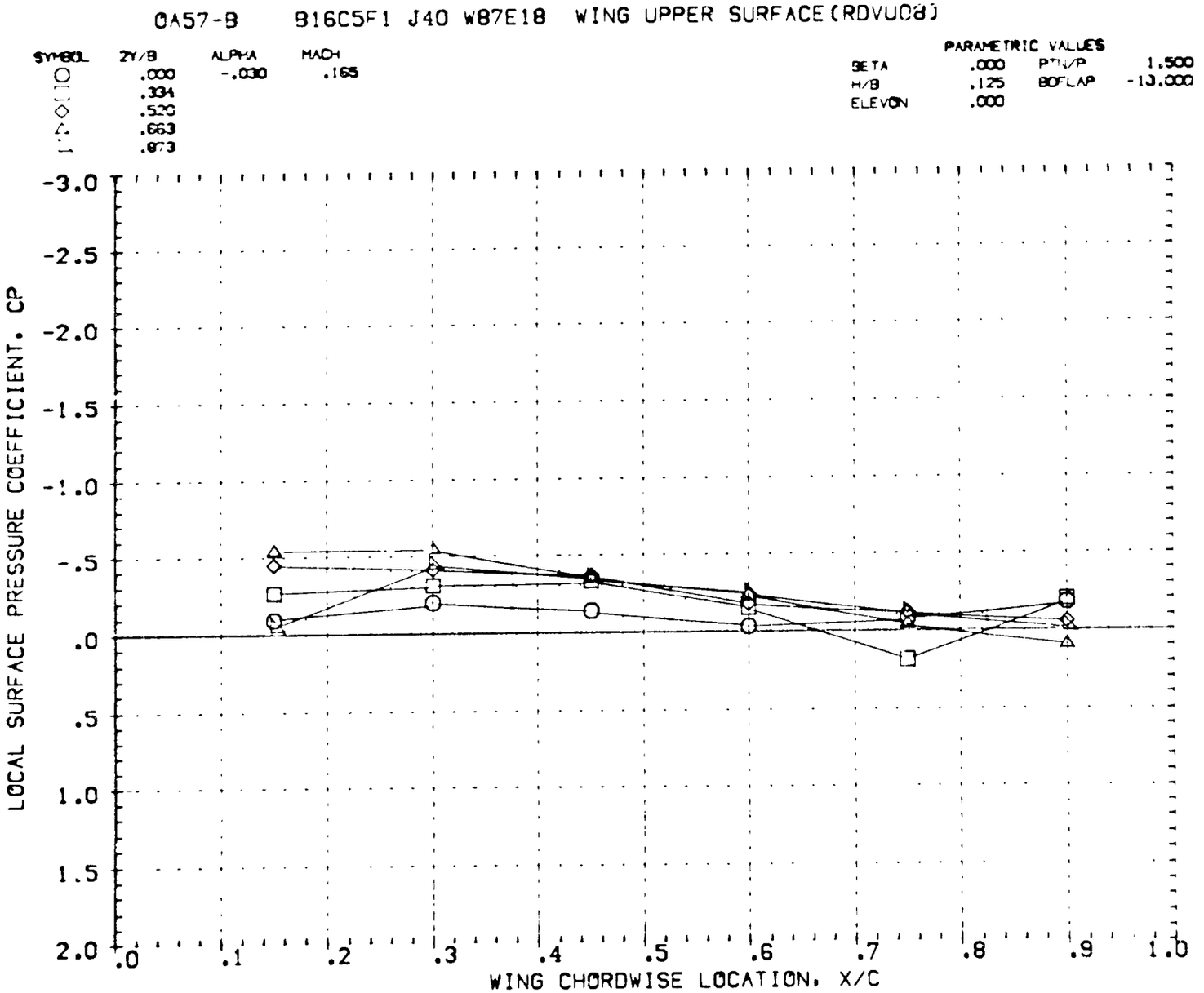


FIG 66 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

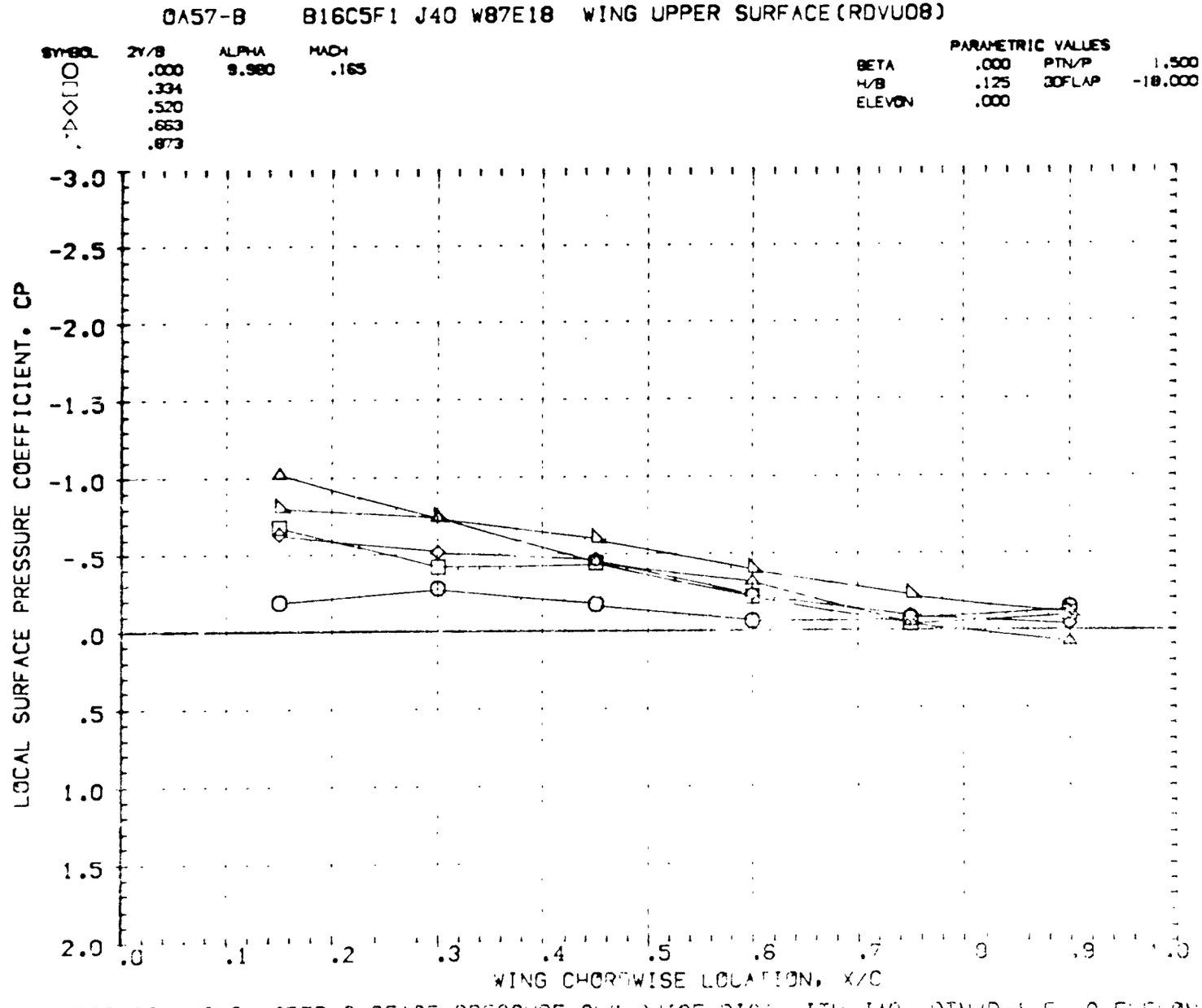


FIG 66 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

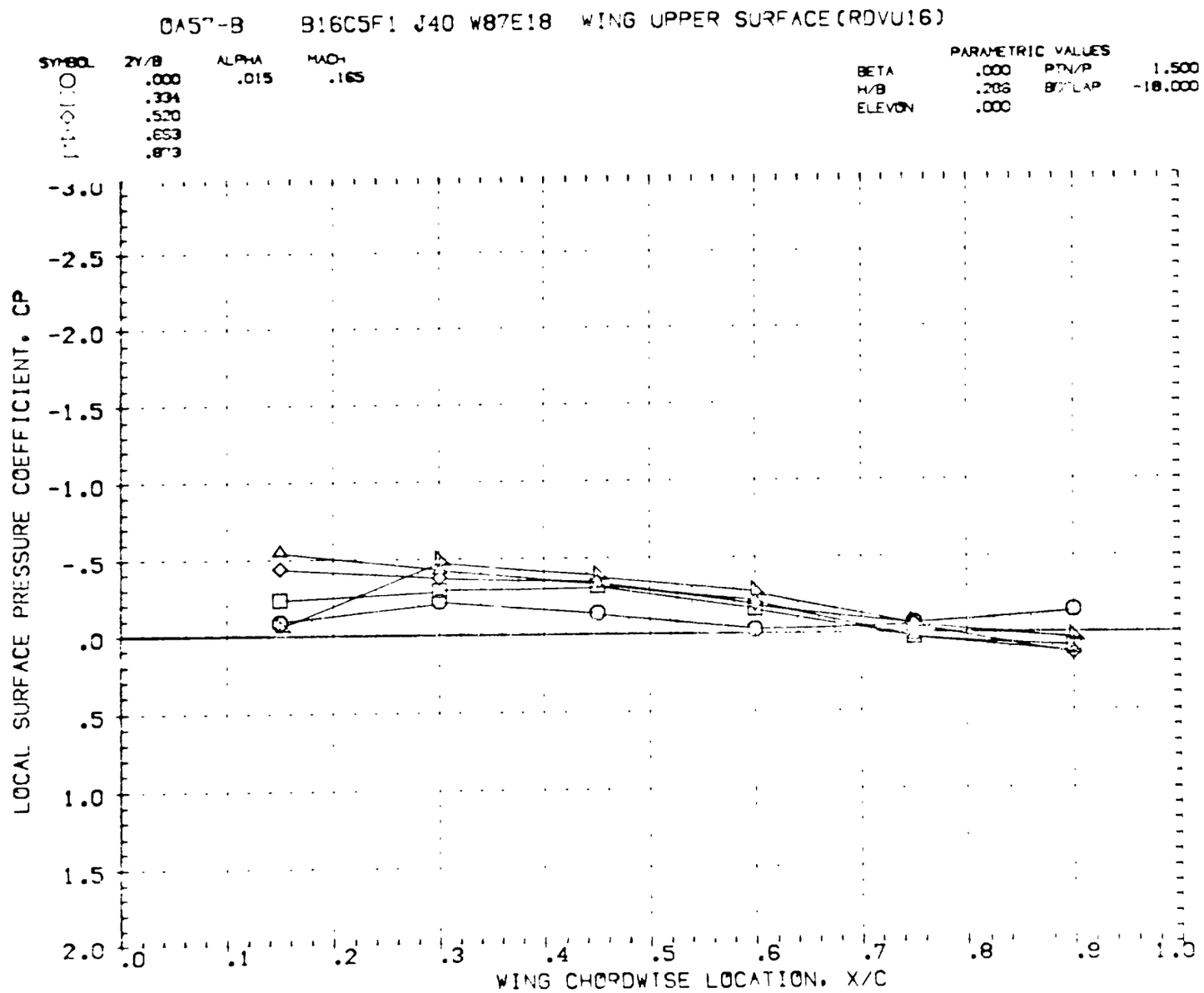


FIG 66 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

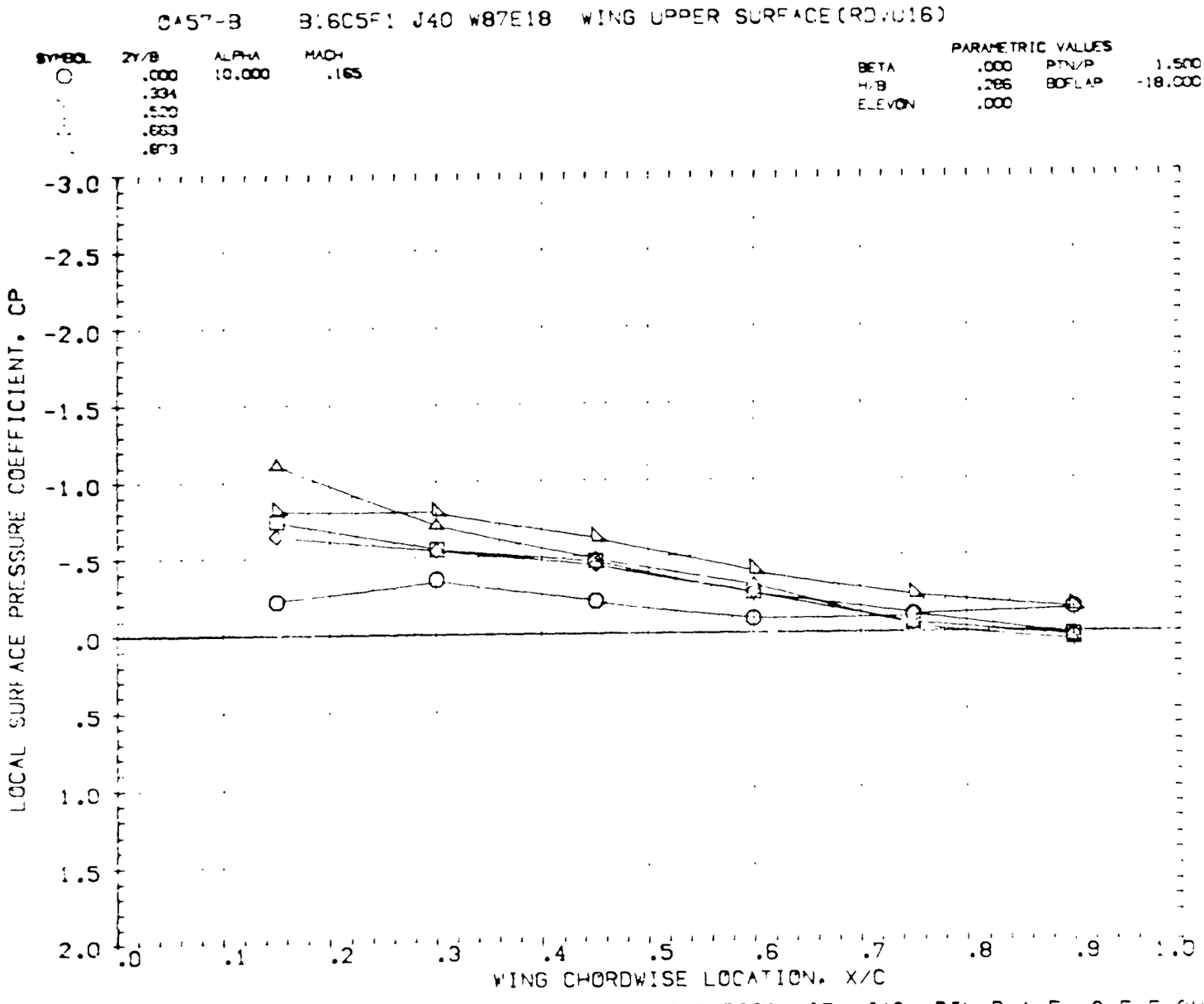


FIG 66 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

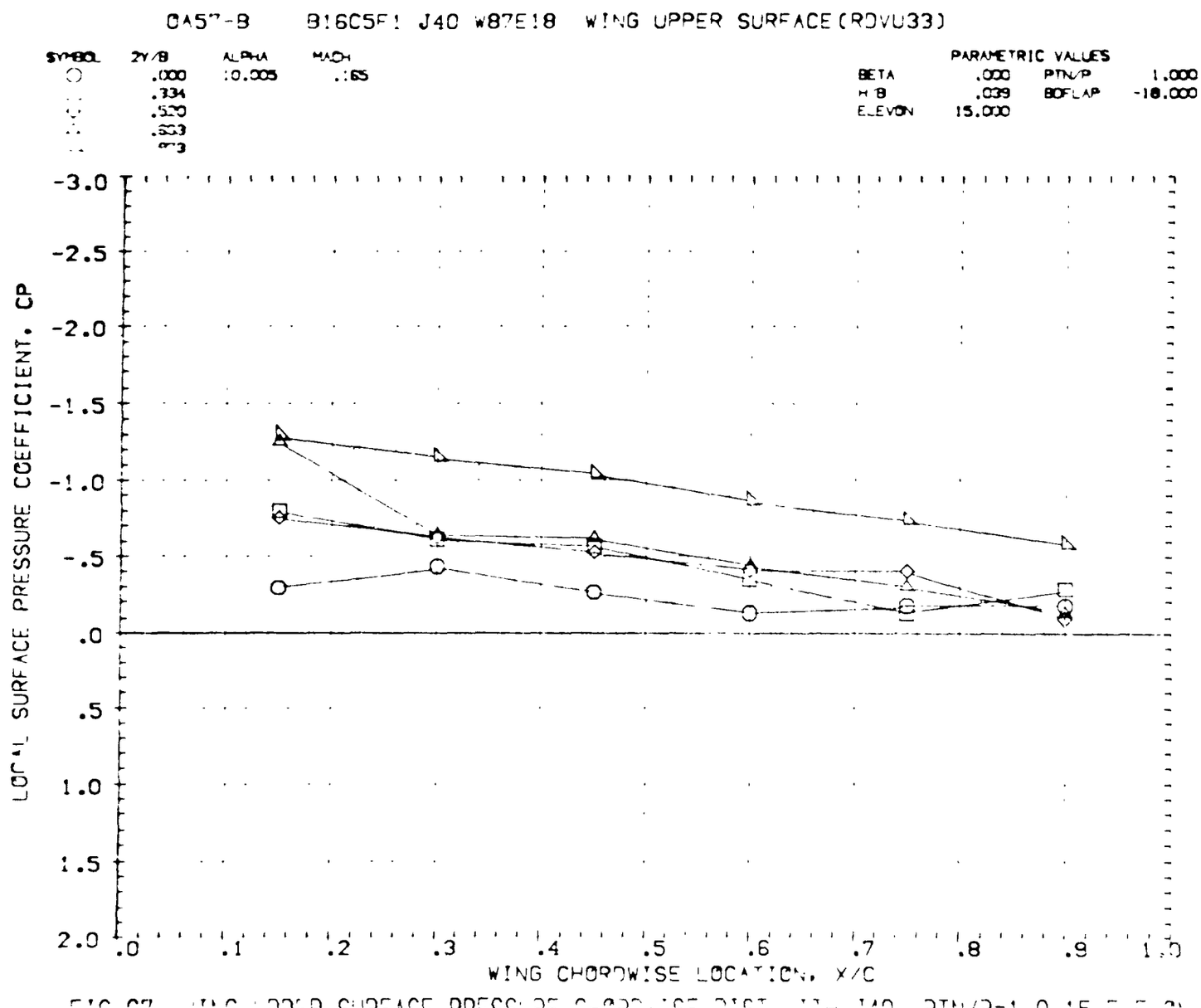


FIG 67 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVON

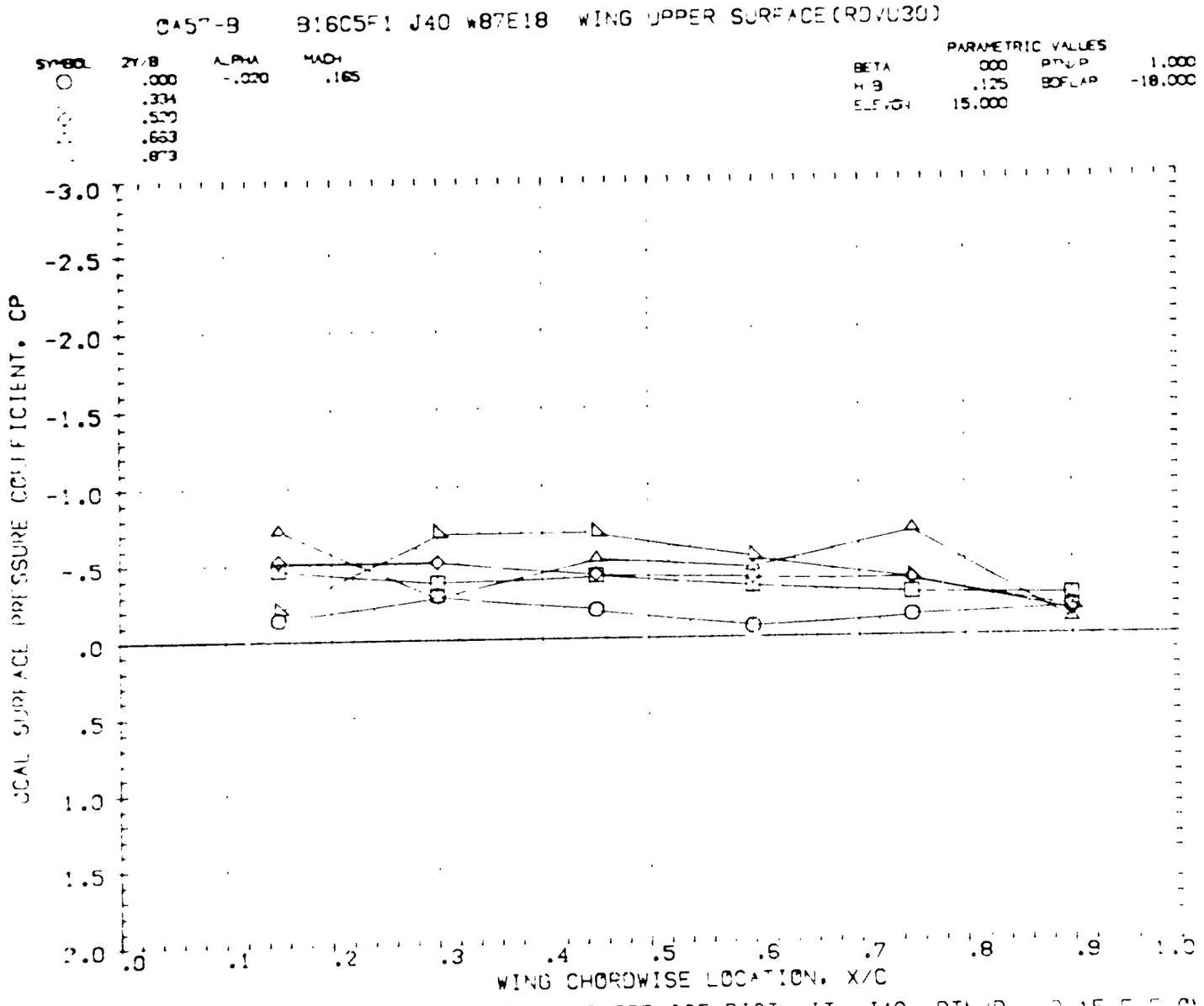


FIG 67 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/PE 1.0, 15 ELEVON

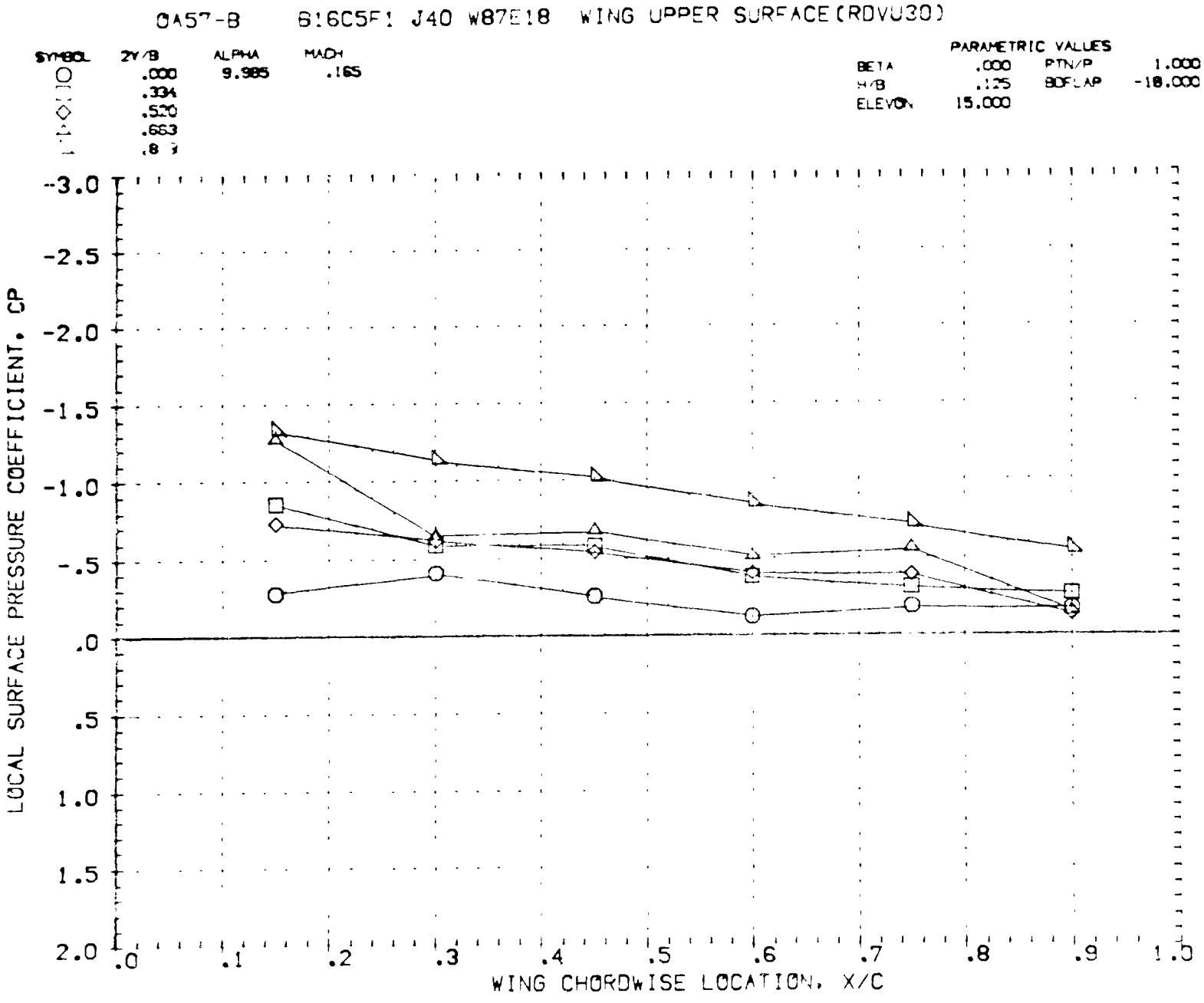


FIG 67 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVON

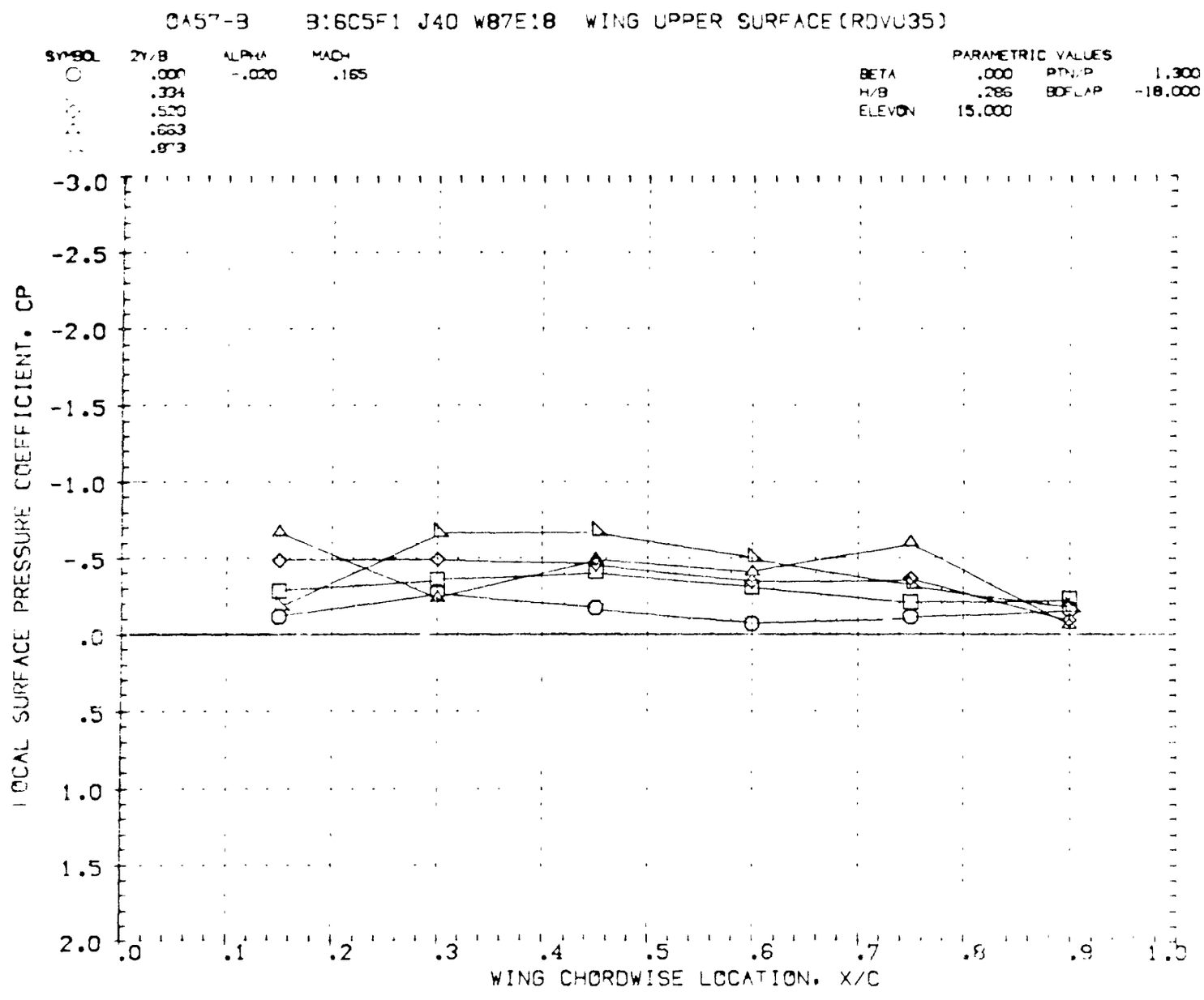


FIG 67 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVON

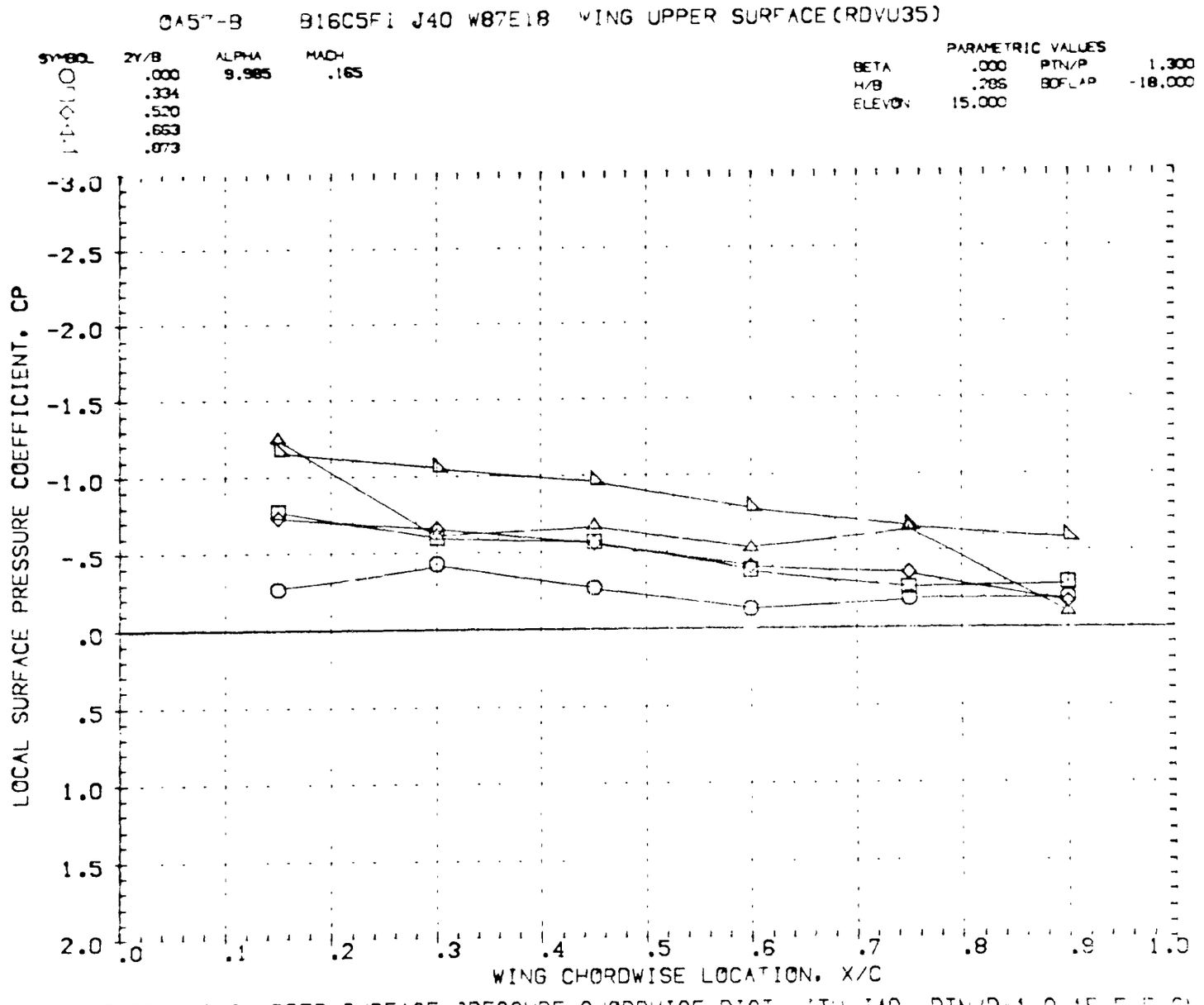


FIG 67 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 15 ELEVON

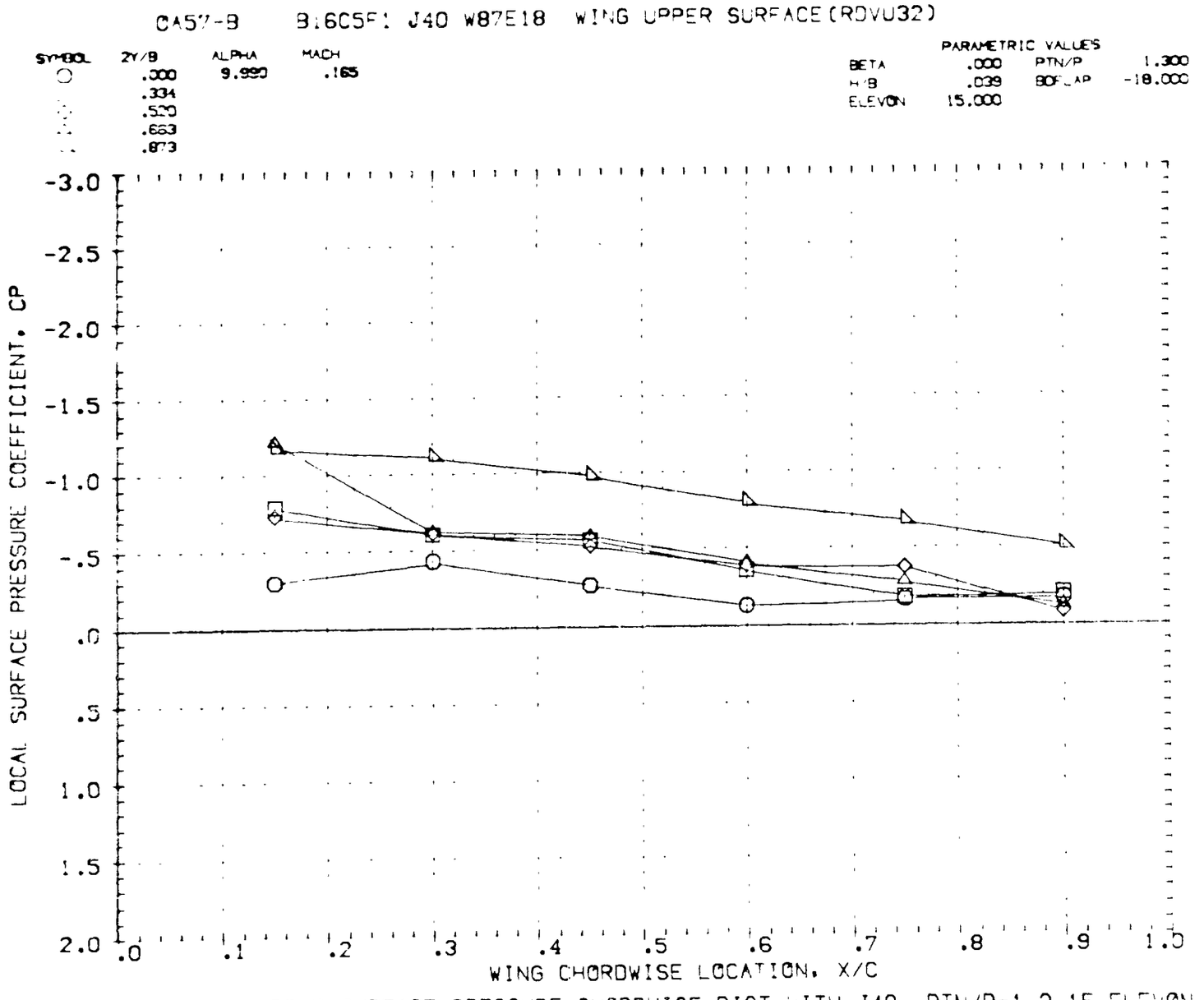


FIG 68 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 15 ELEVON

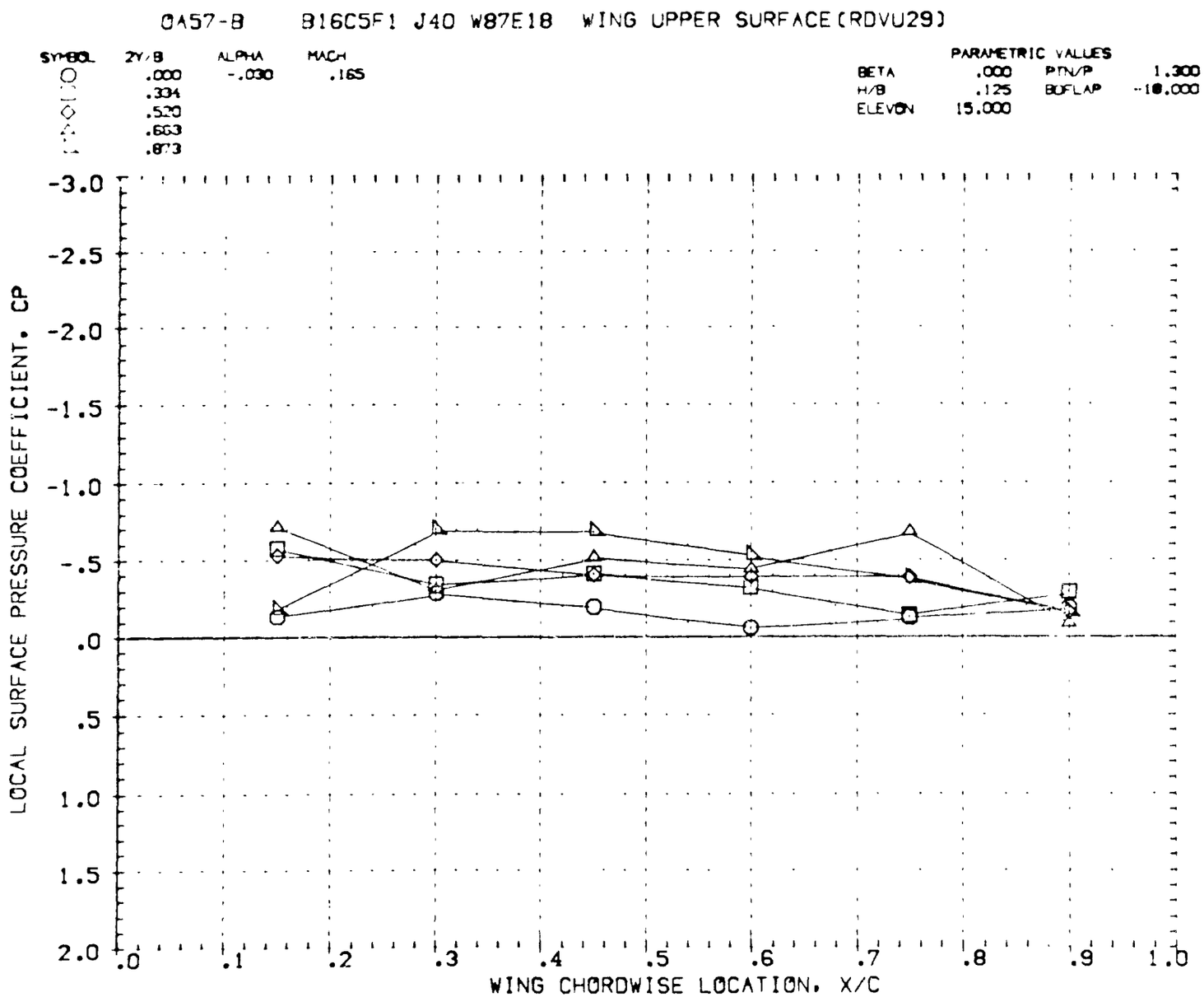


FIG 68 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

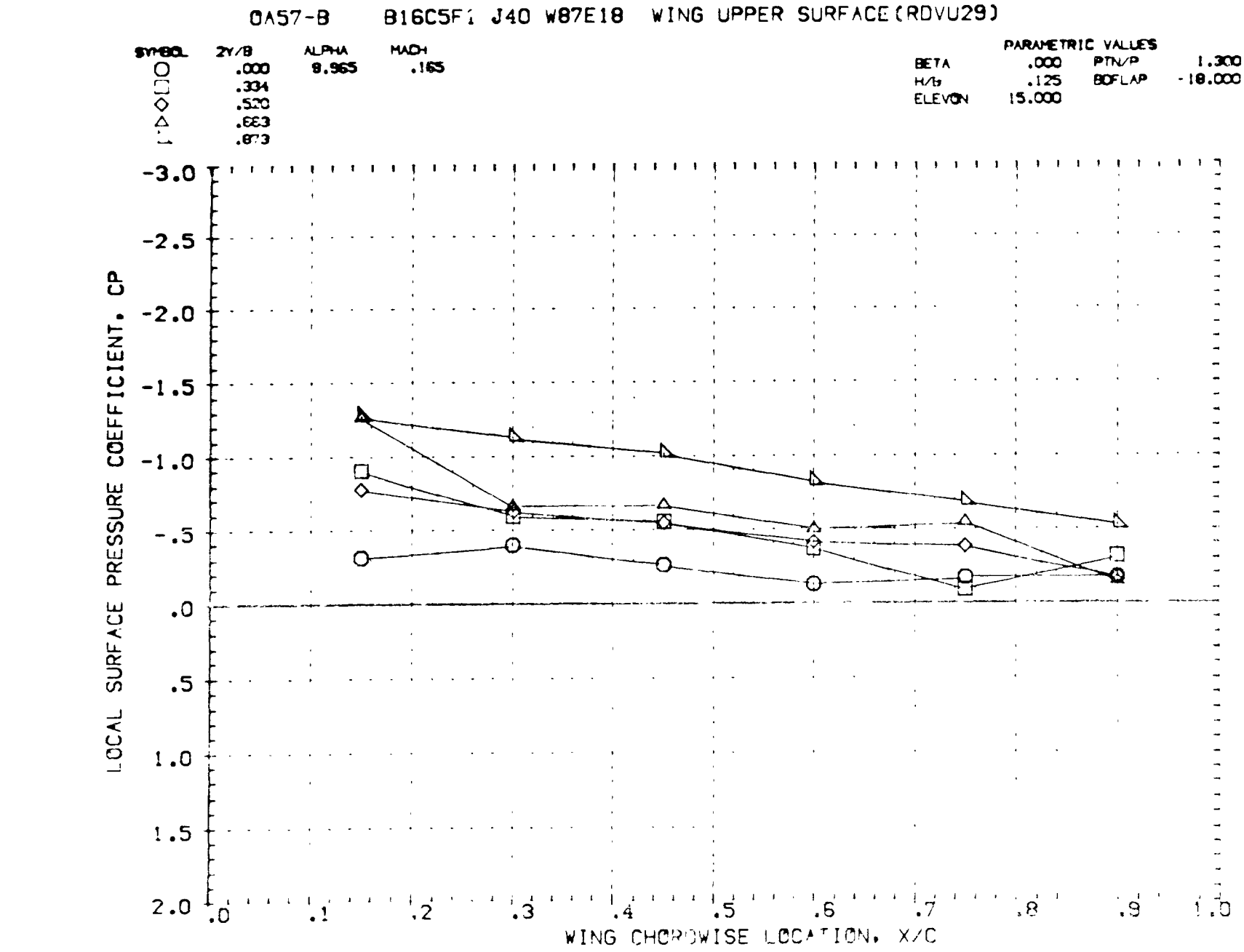


FIG 68 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

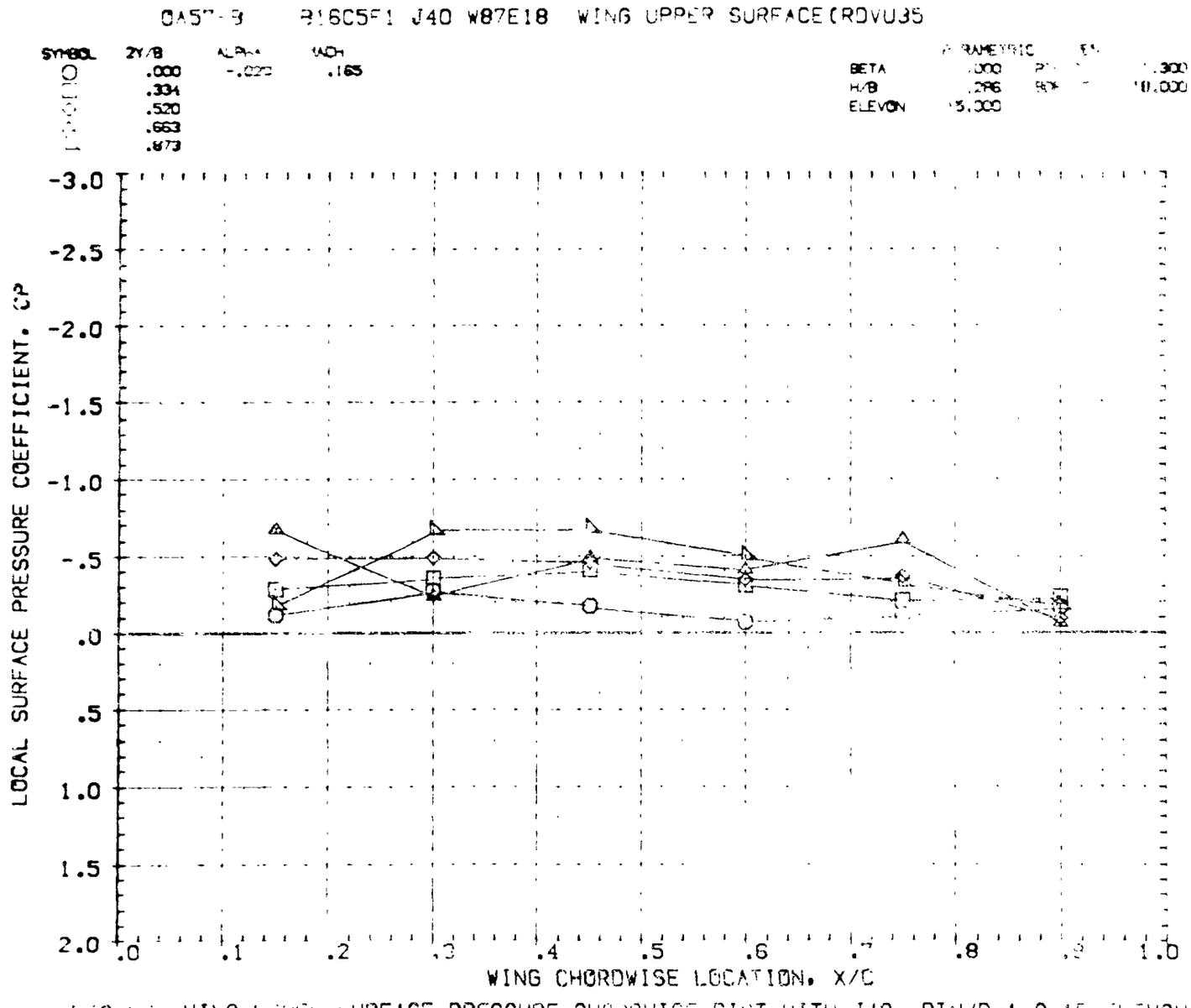


FIG [illegible] WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PIN/P=1.3,15 ELEVON

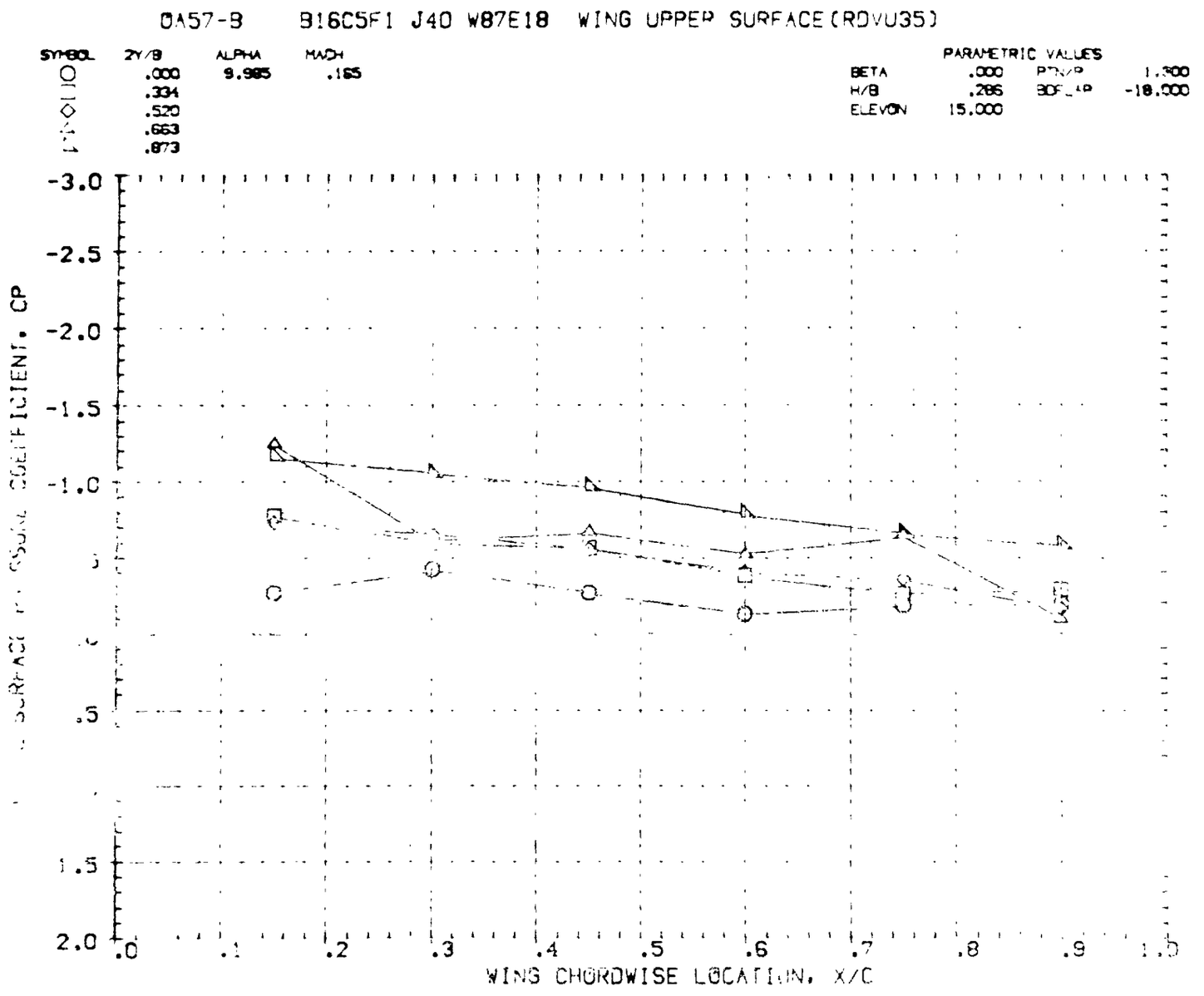


FIG 68 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, P2/P 1.3 ELEVON

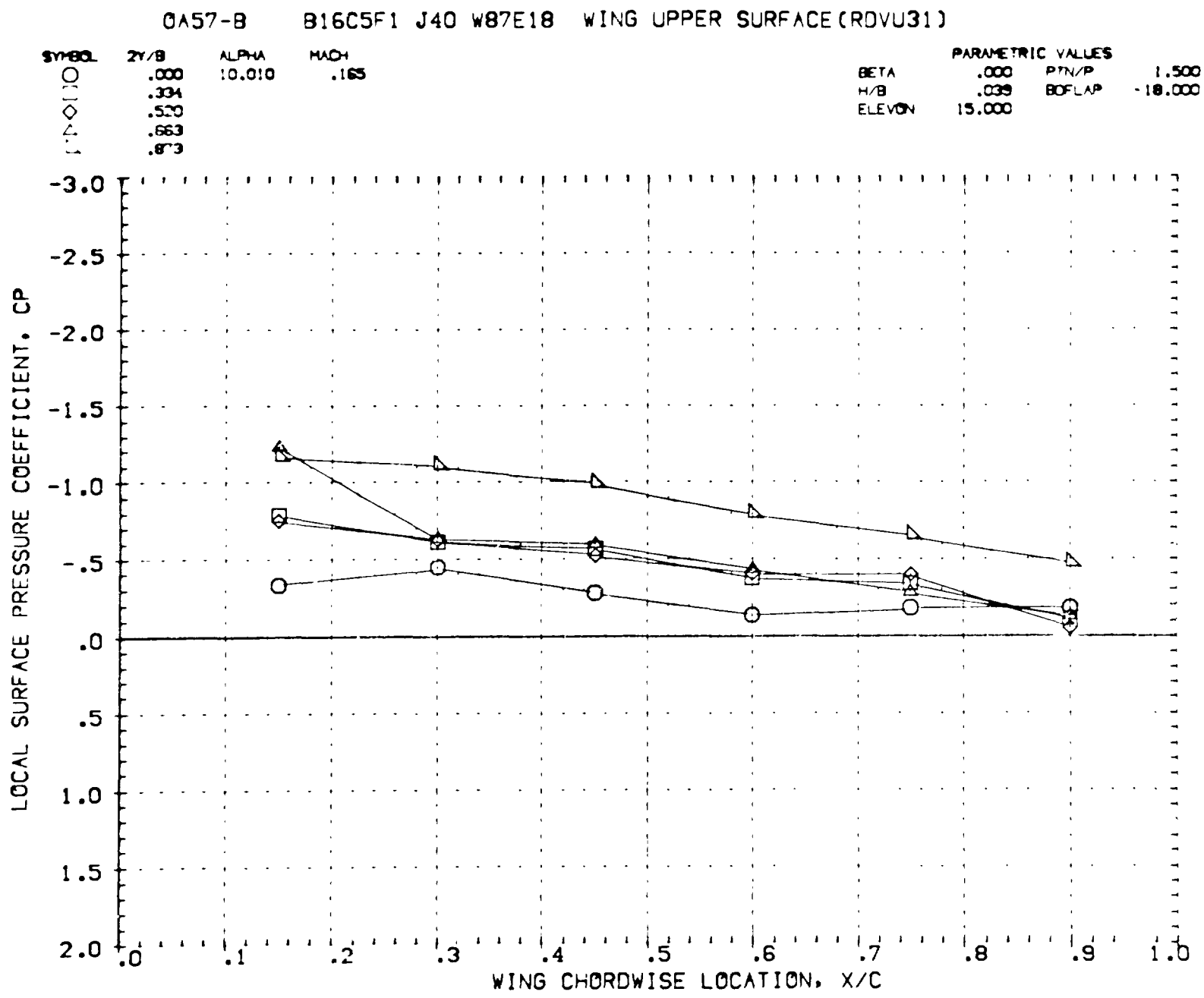


FIG 69 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

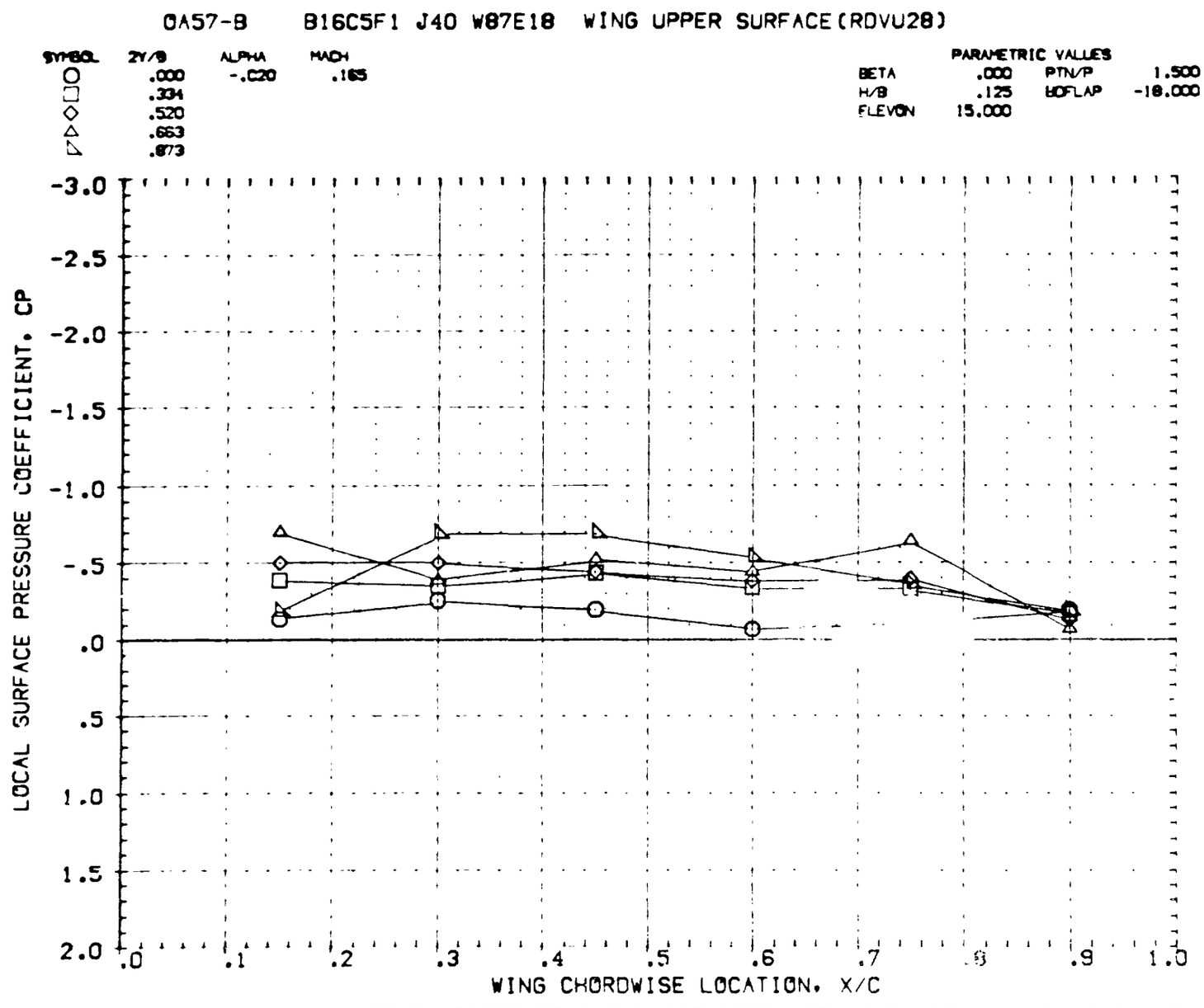


FIG 69 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

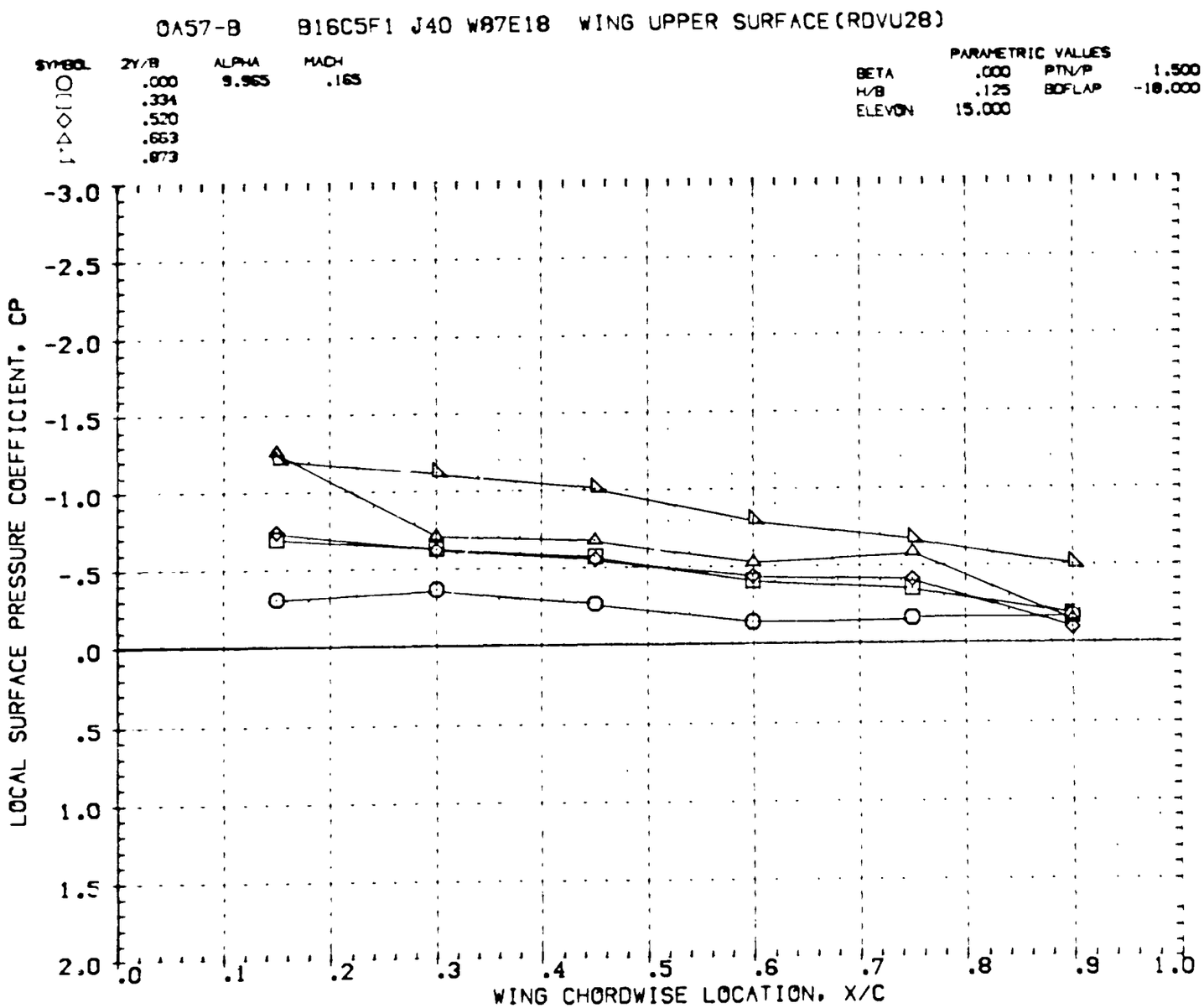


FIG 69 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

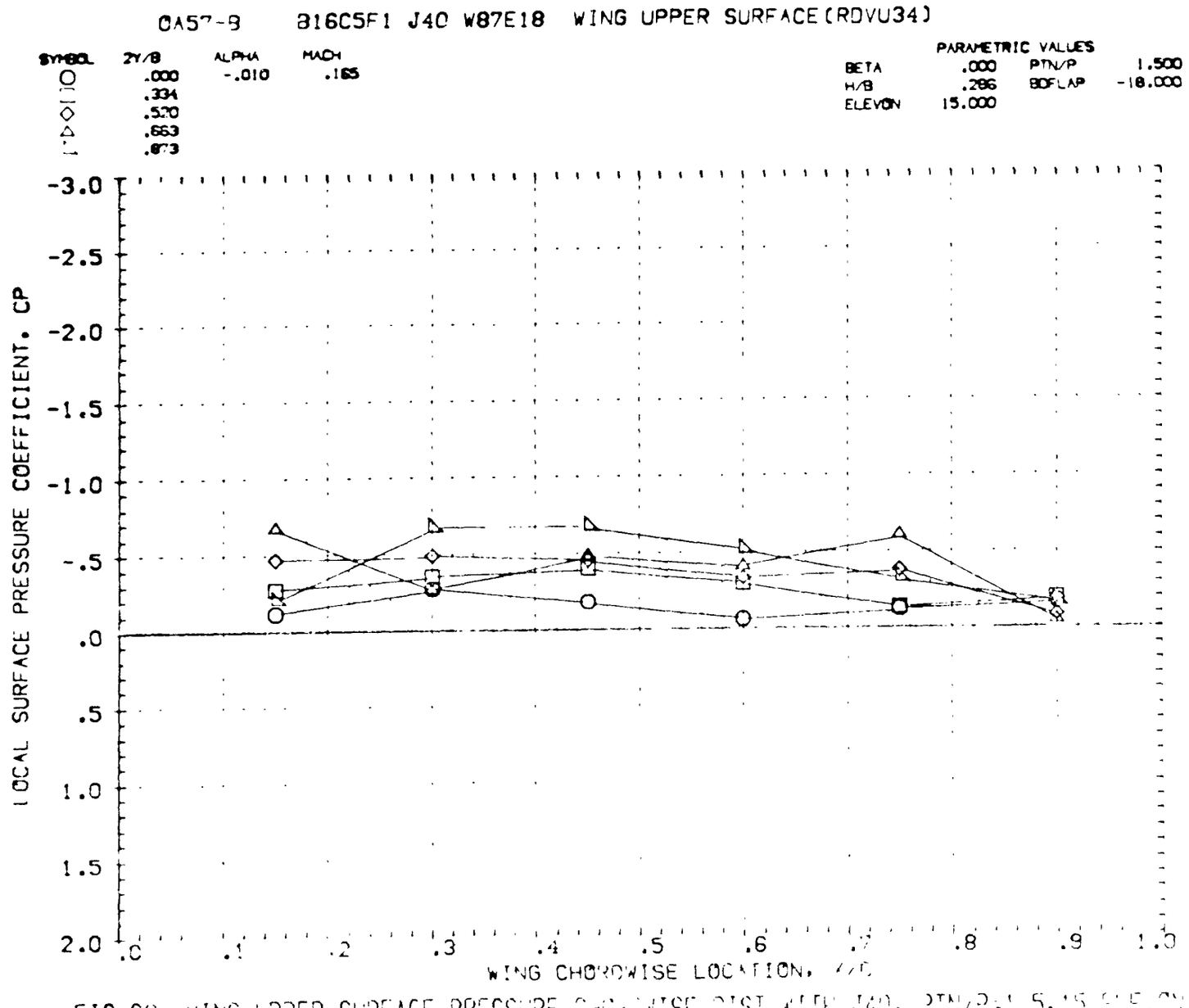


FIG 69 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 15 ELEVON

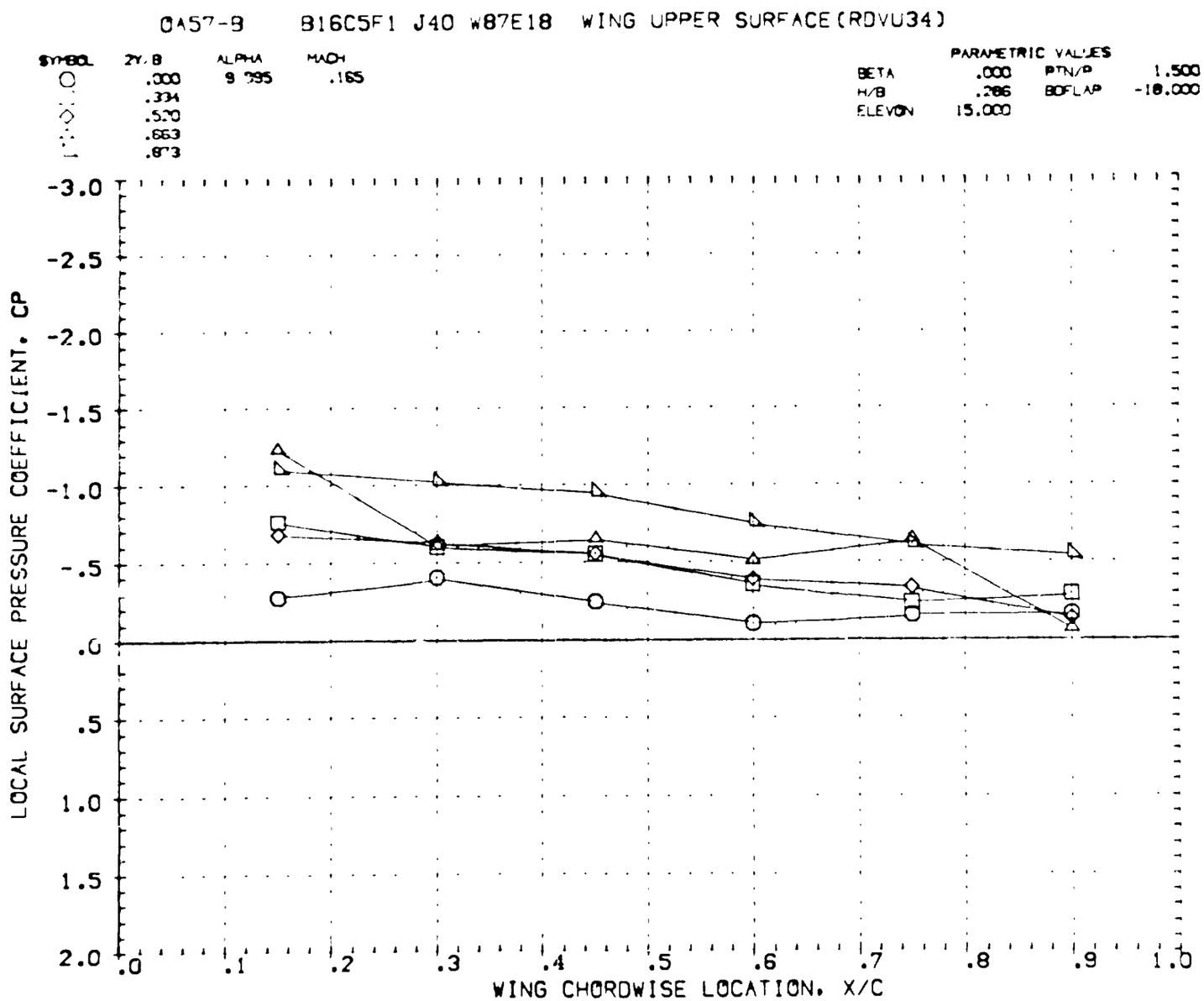


FIG 69 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

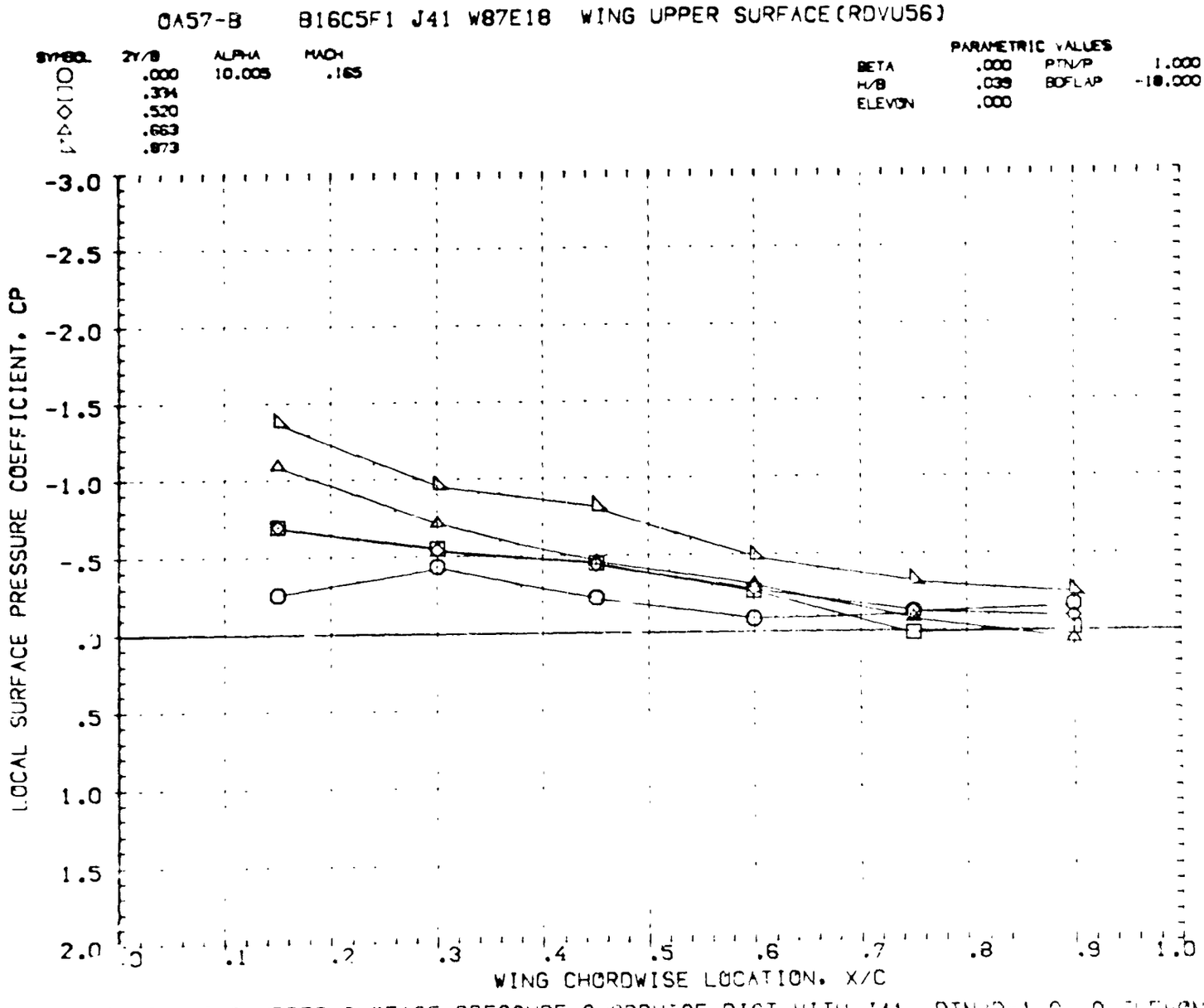


FIG 70 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

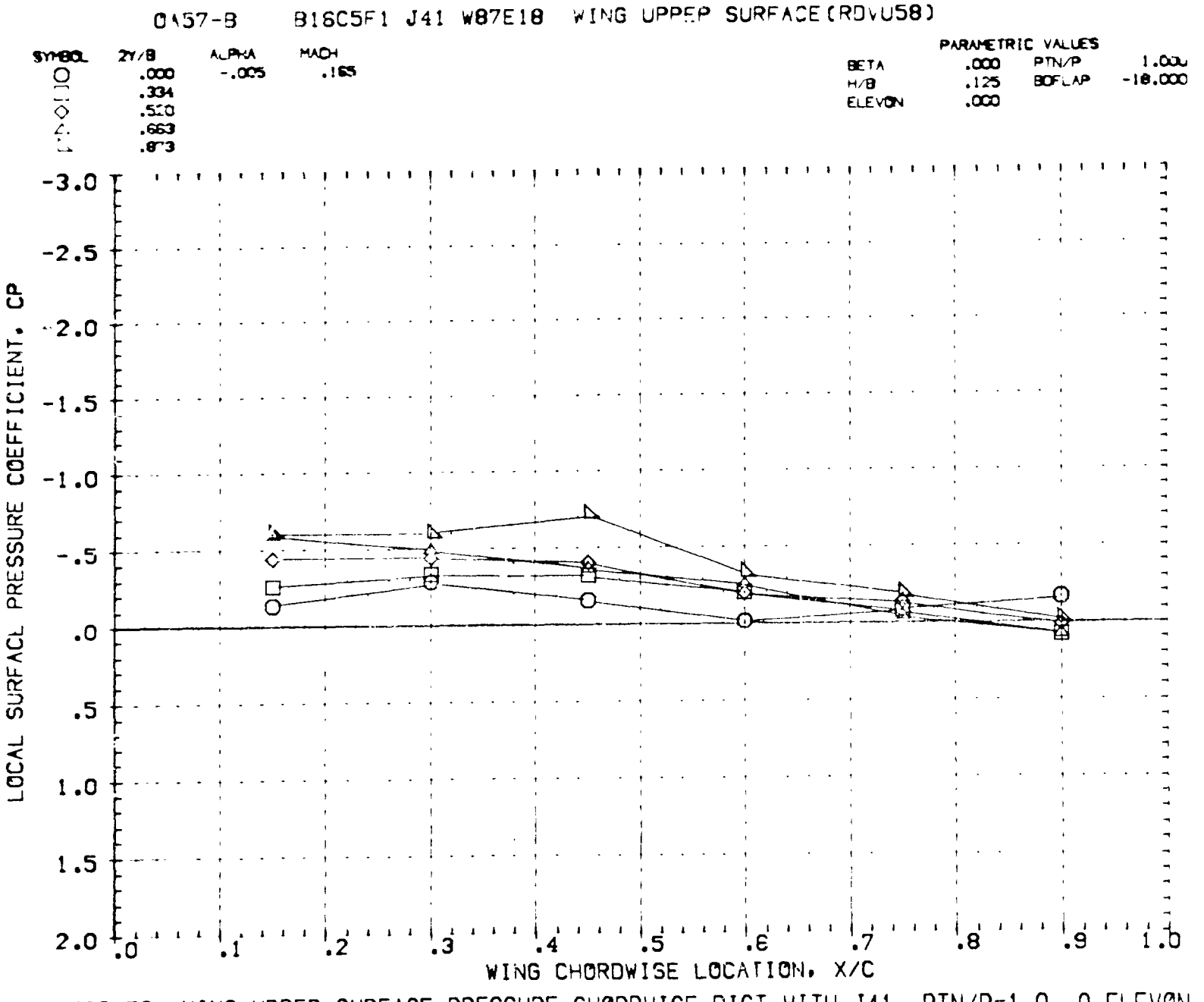


FIG 70 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

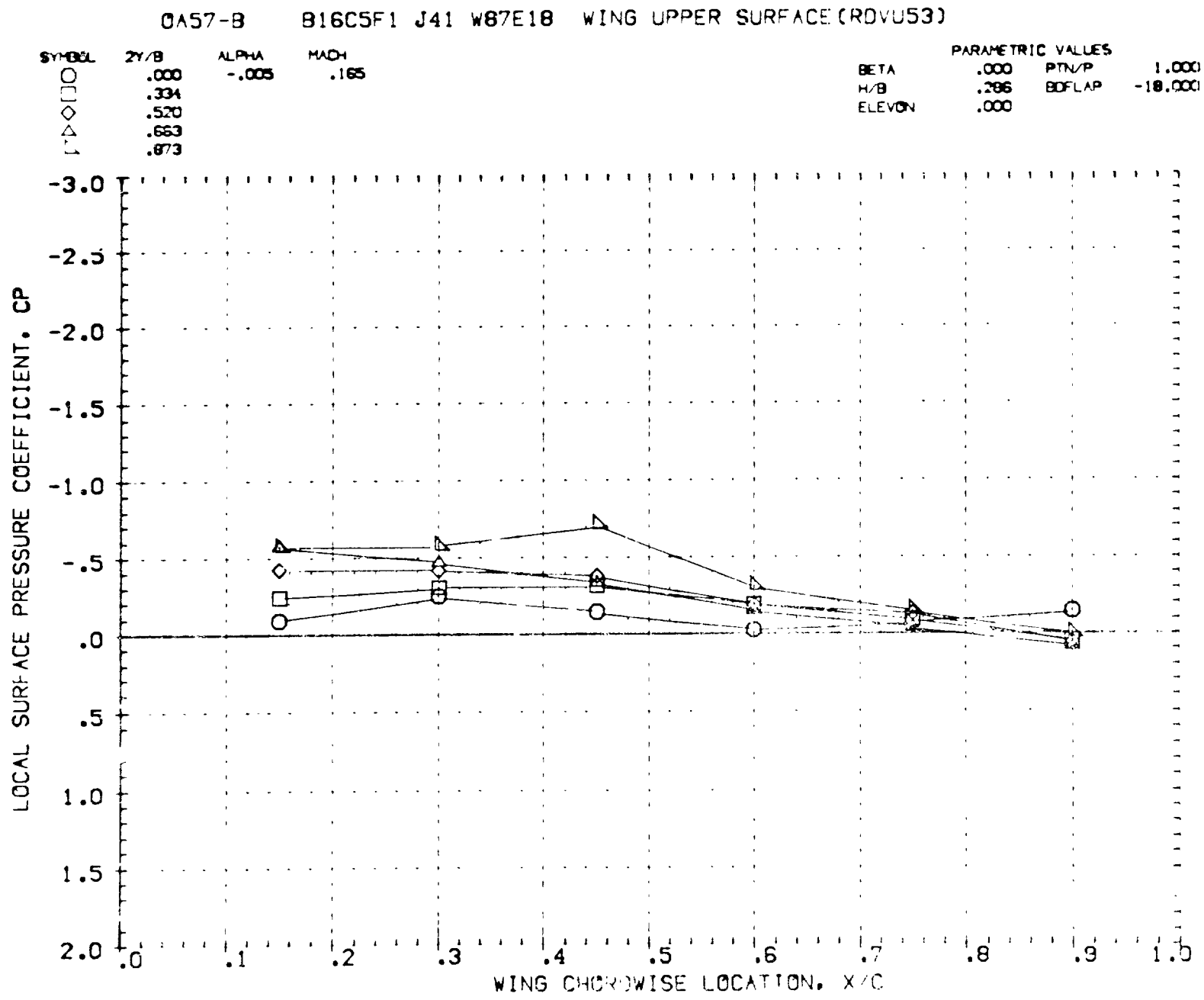


FIG 70 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P-1.0, 0 ELEVON

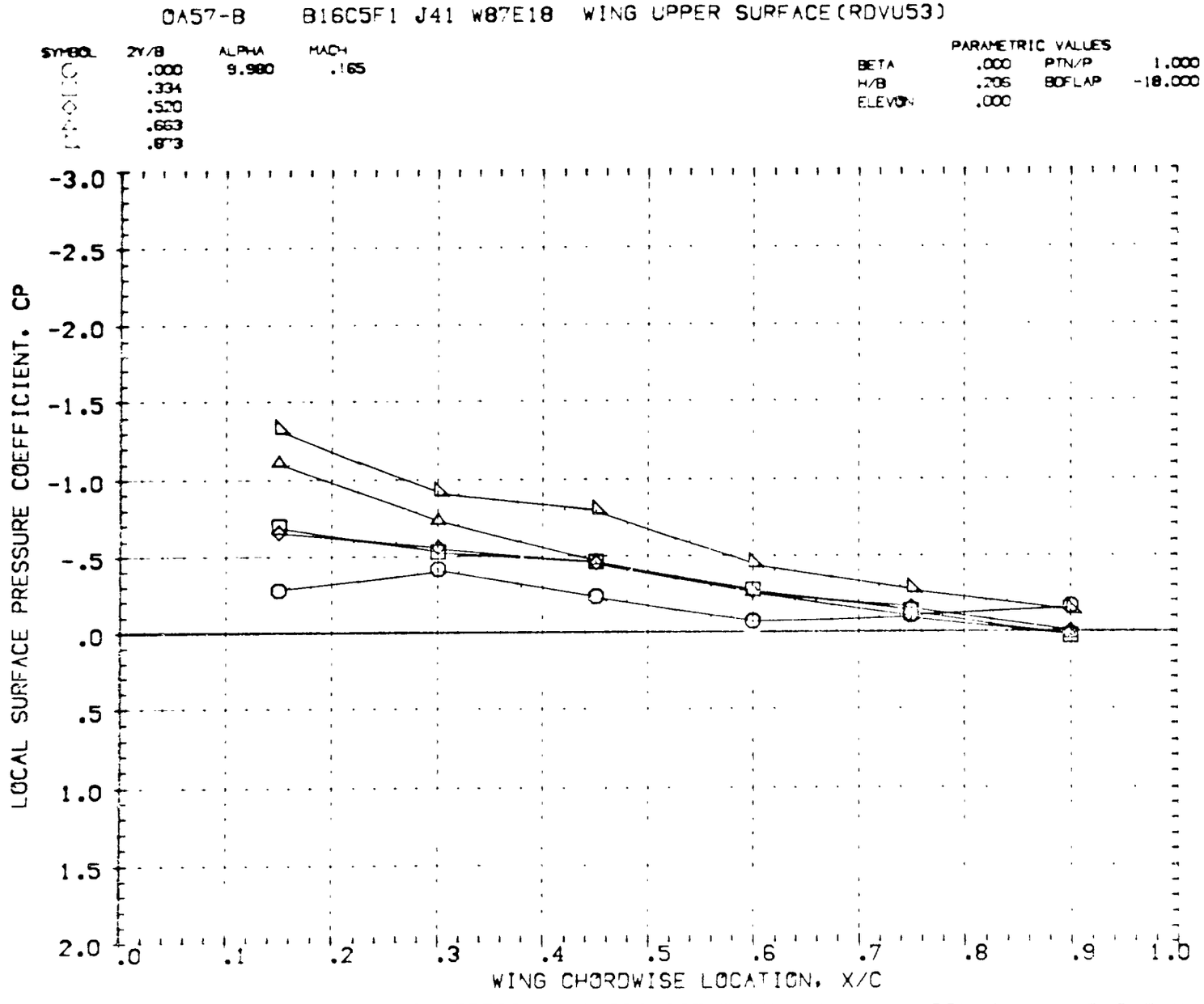


FIG 70 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

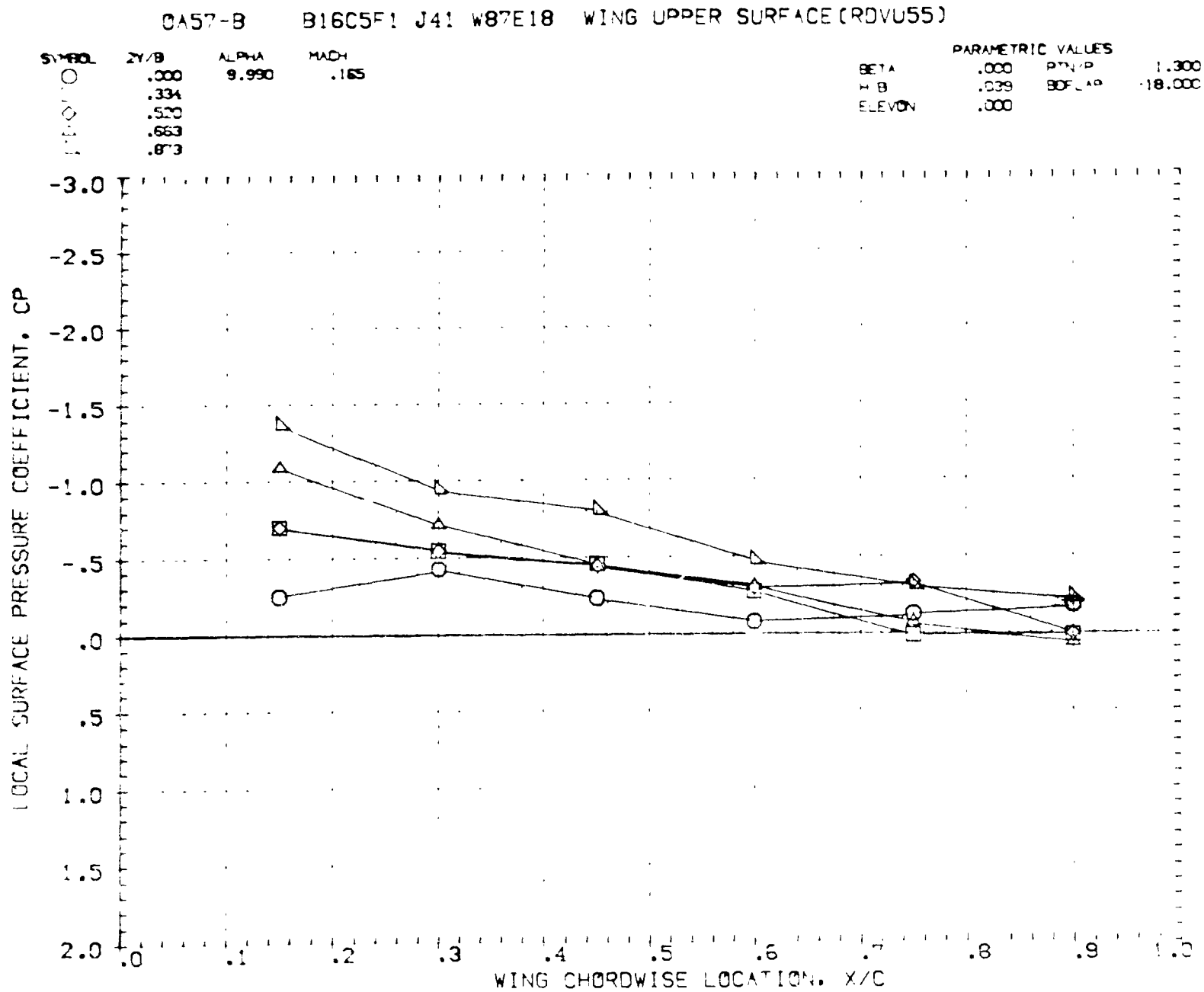


FIG 71 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

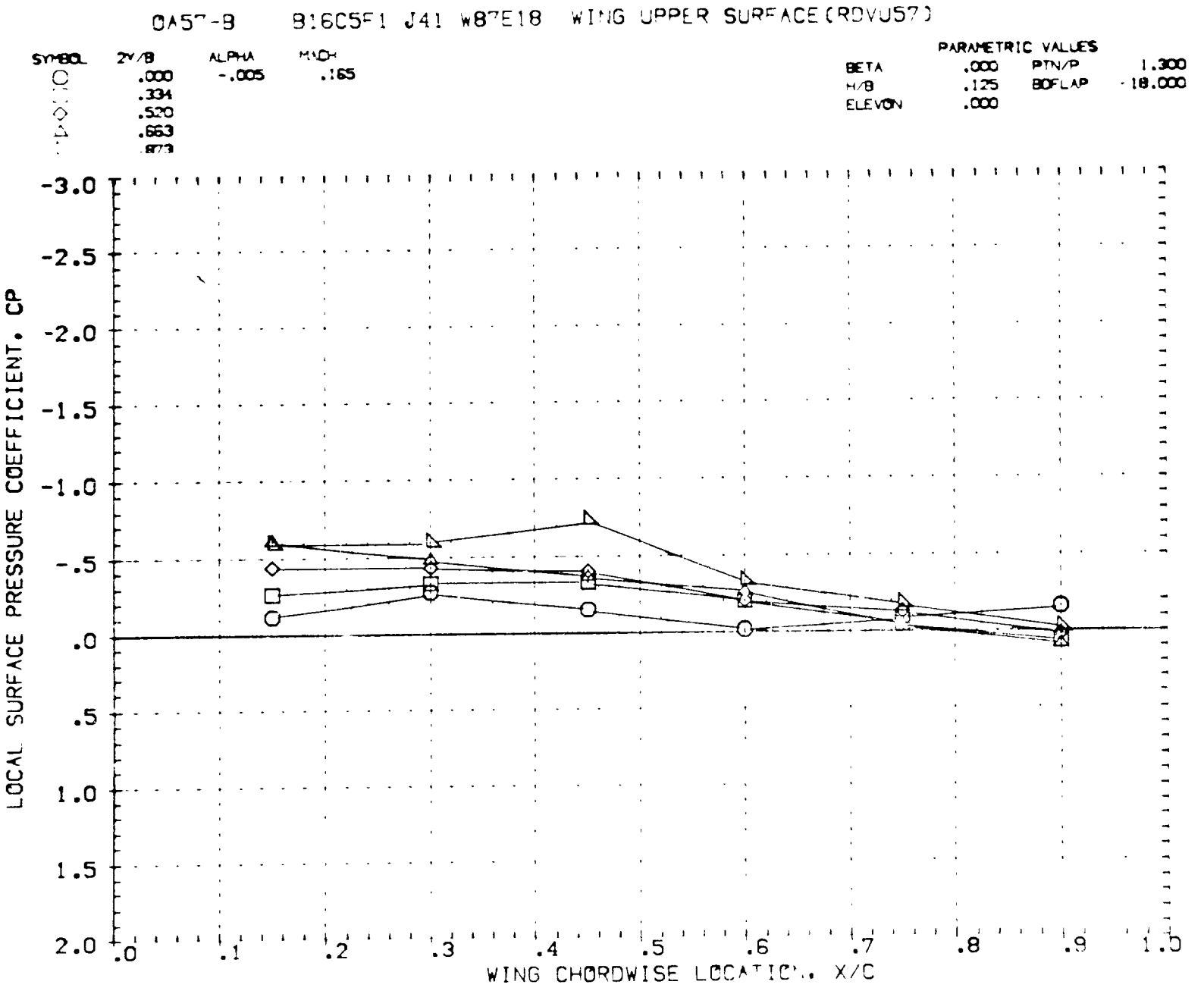


FIG 71 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, [illegible]

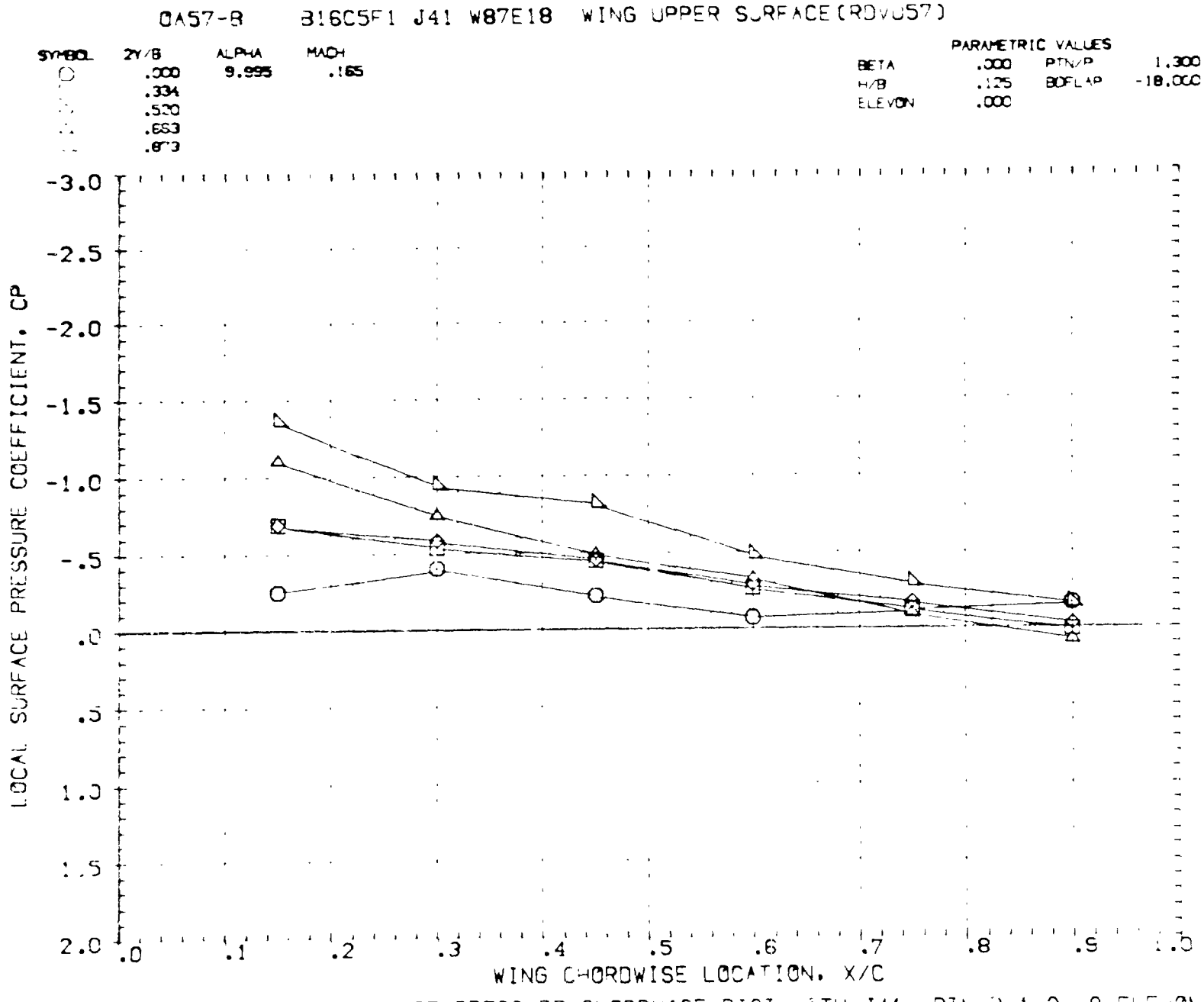


FIG 71 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN P=1.3, 0 ELEVON

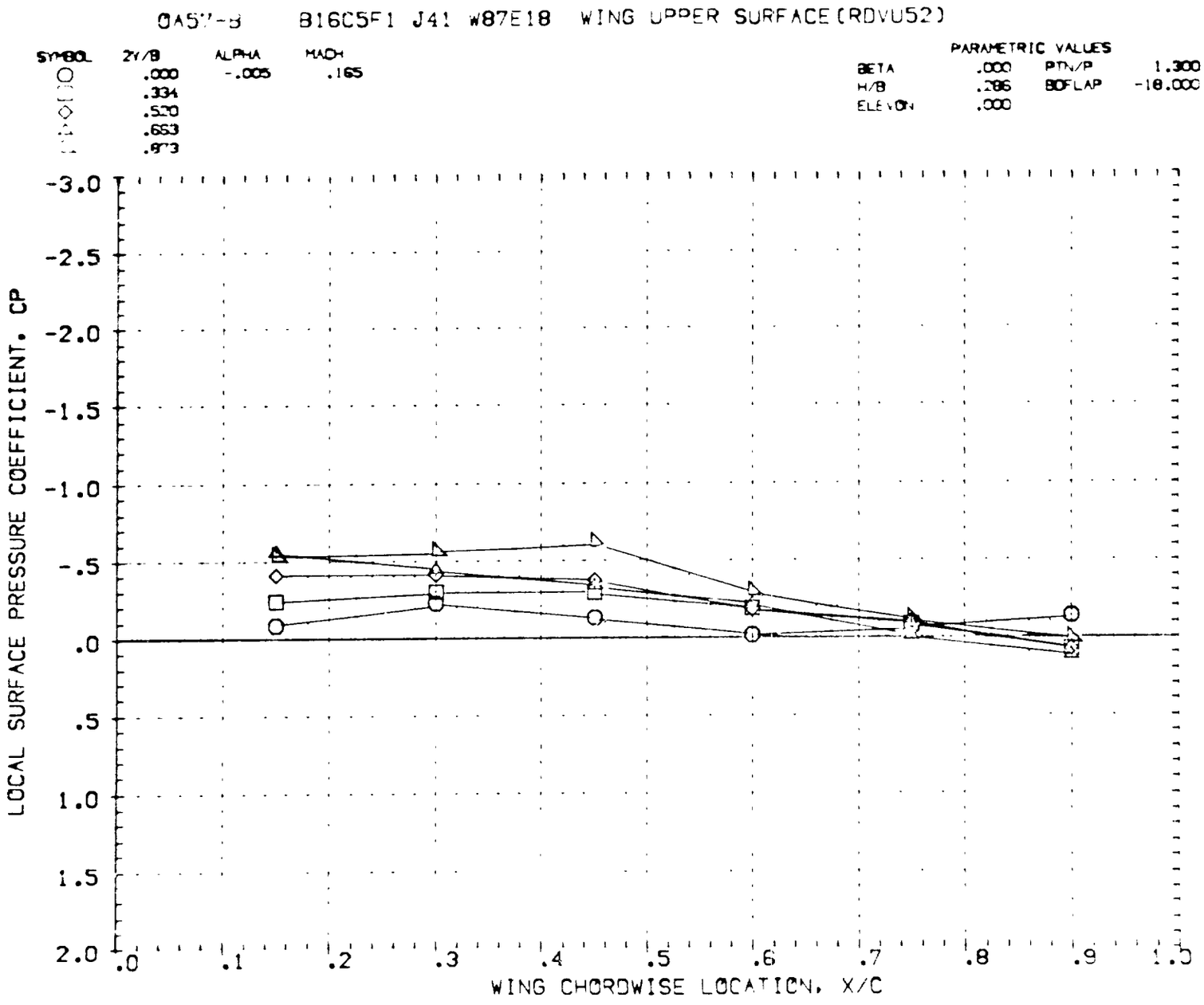


FIG 71 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

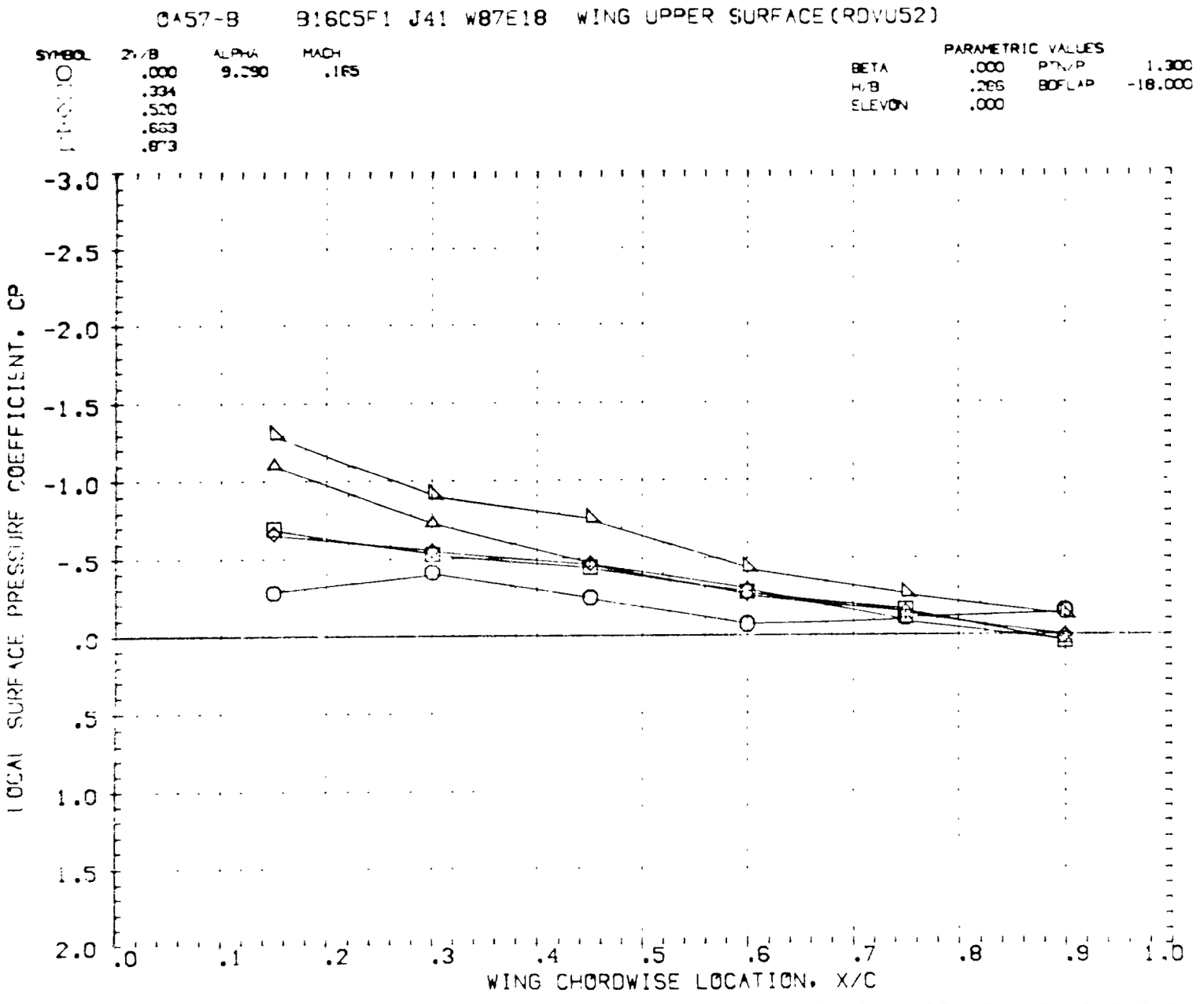


FIG 71 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

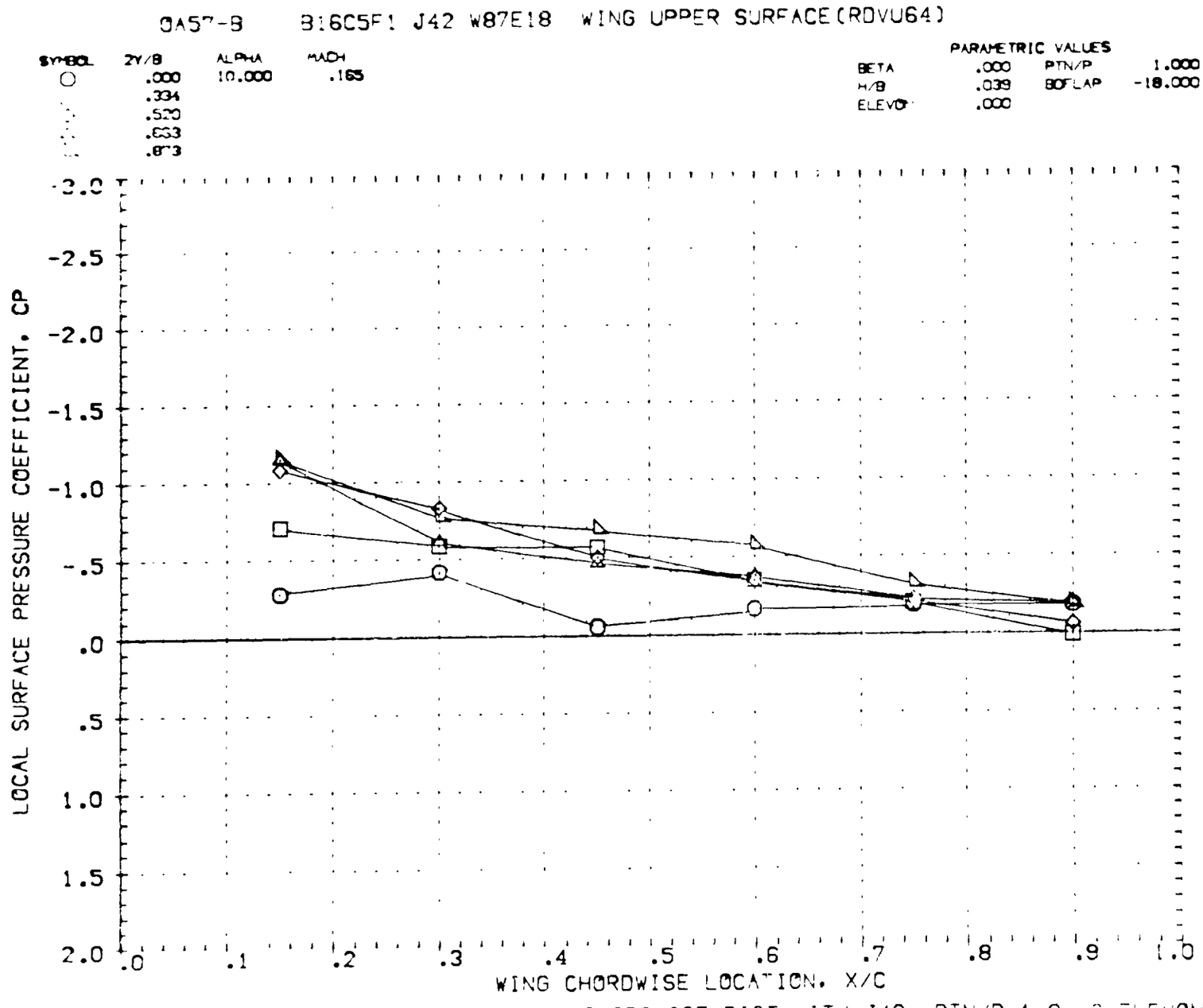


FIG 72 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

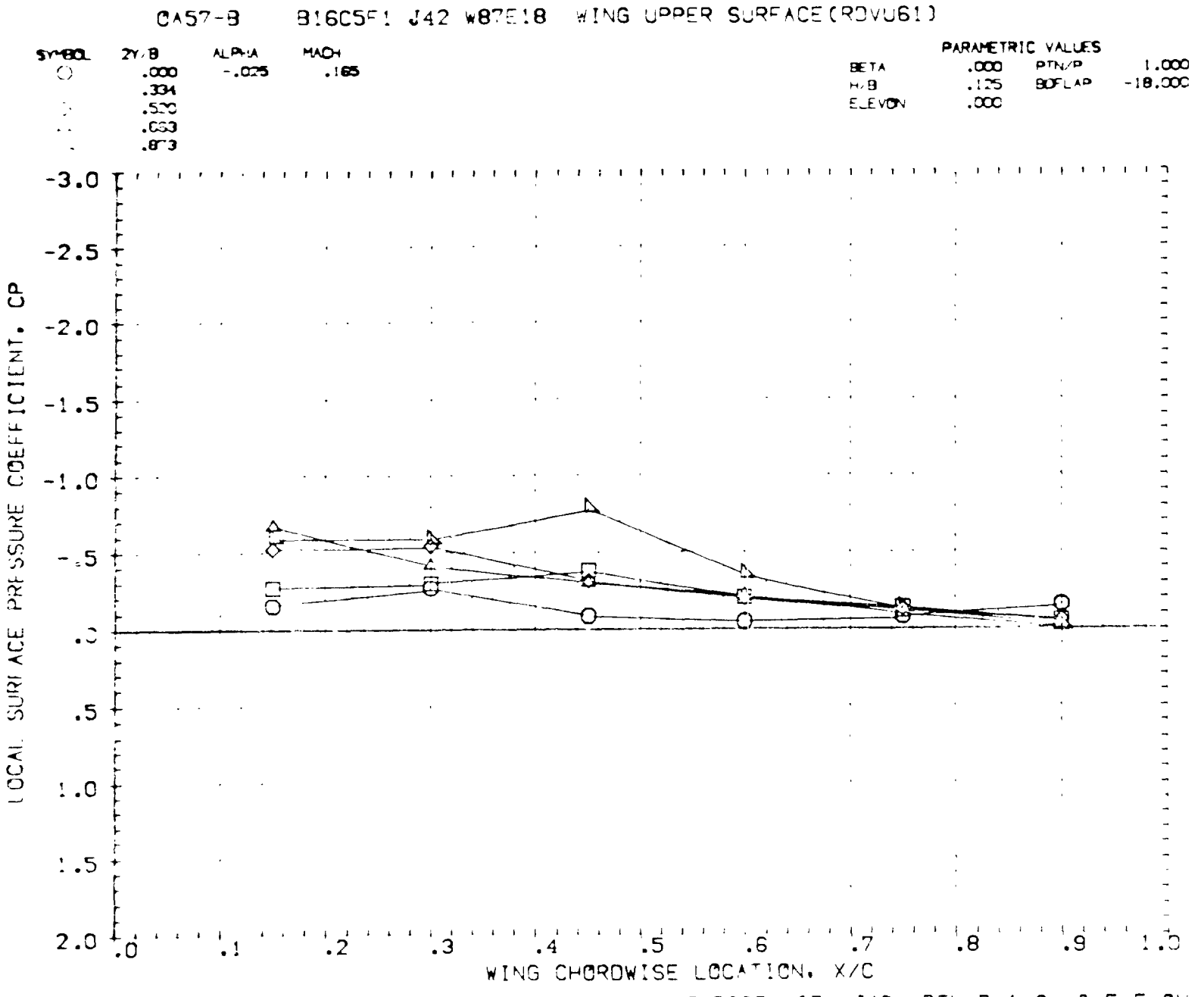


FIG 72 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

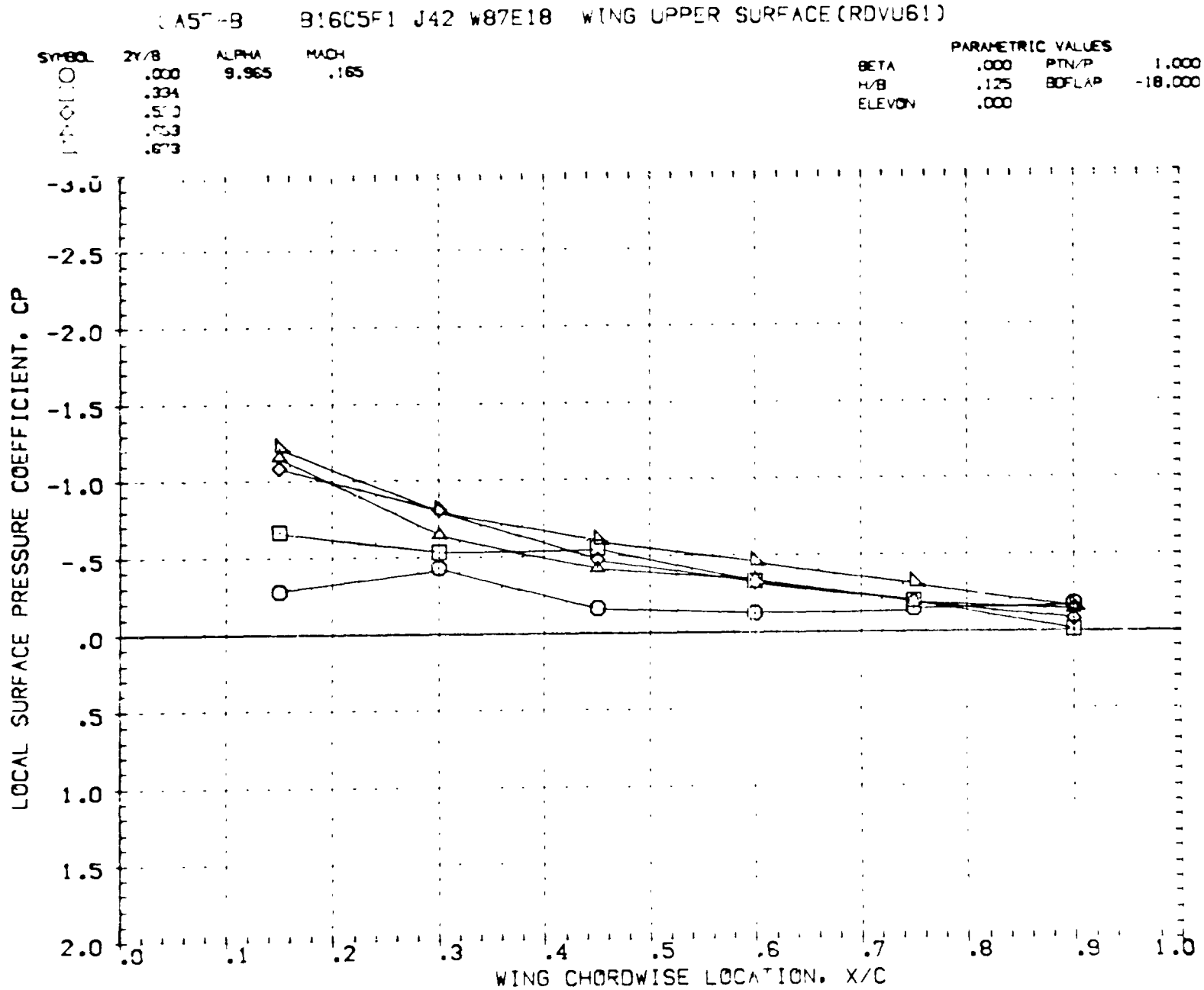


FIG 72 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

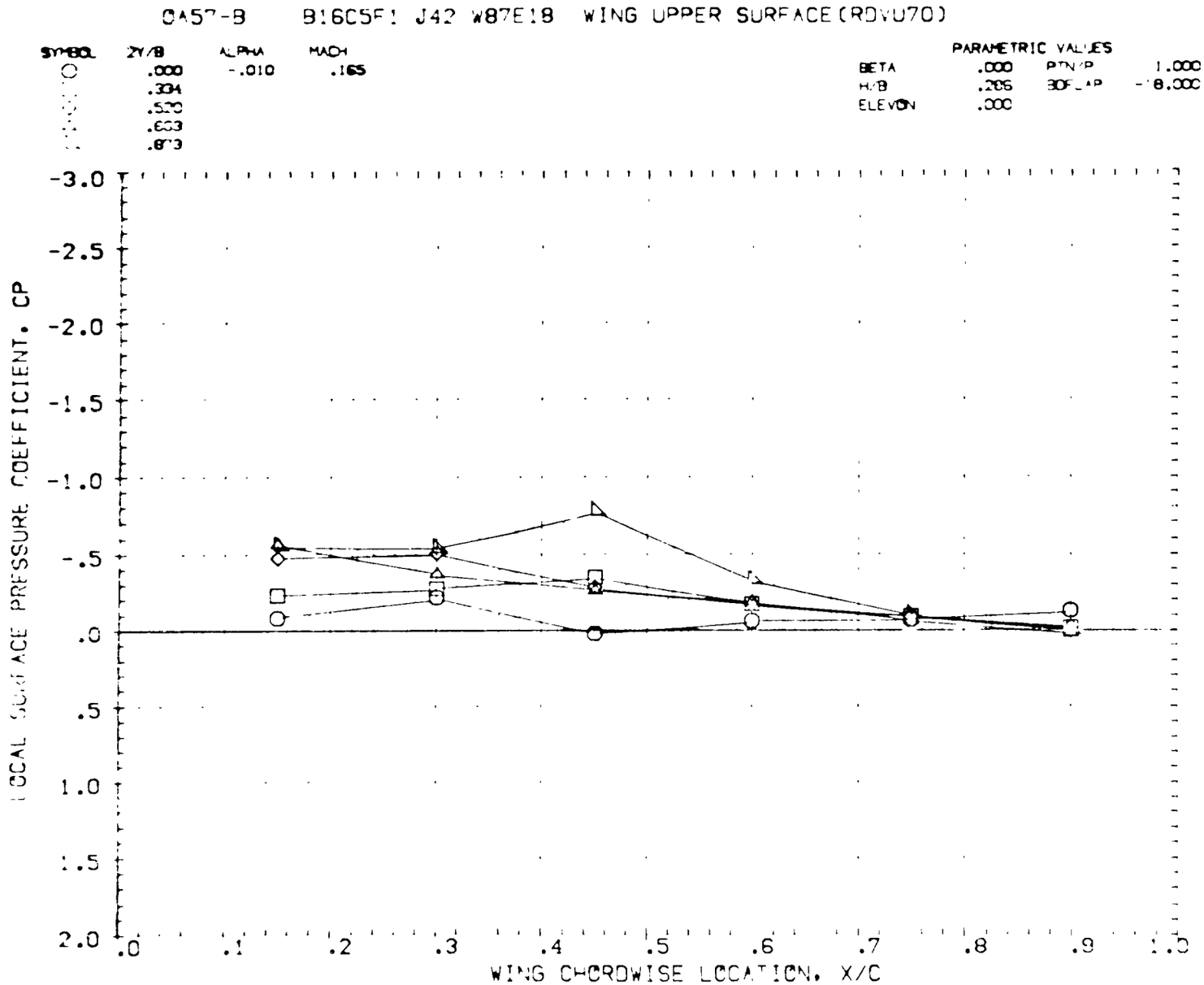


FIG 72 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN P=1.0, 0 ELEVON

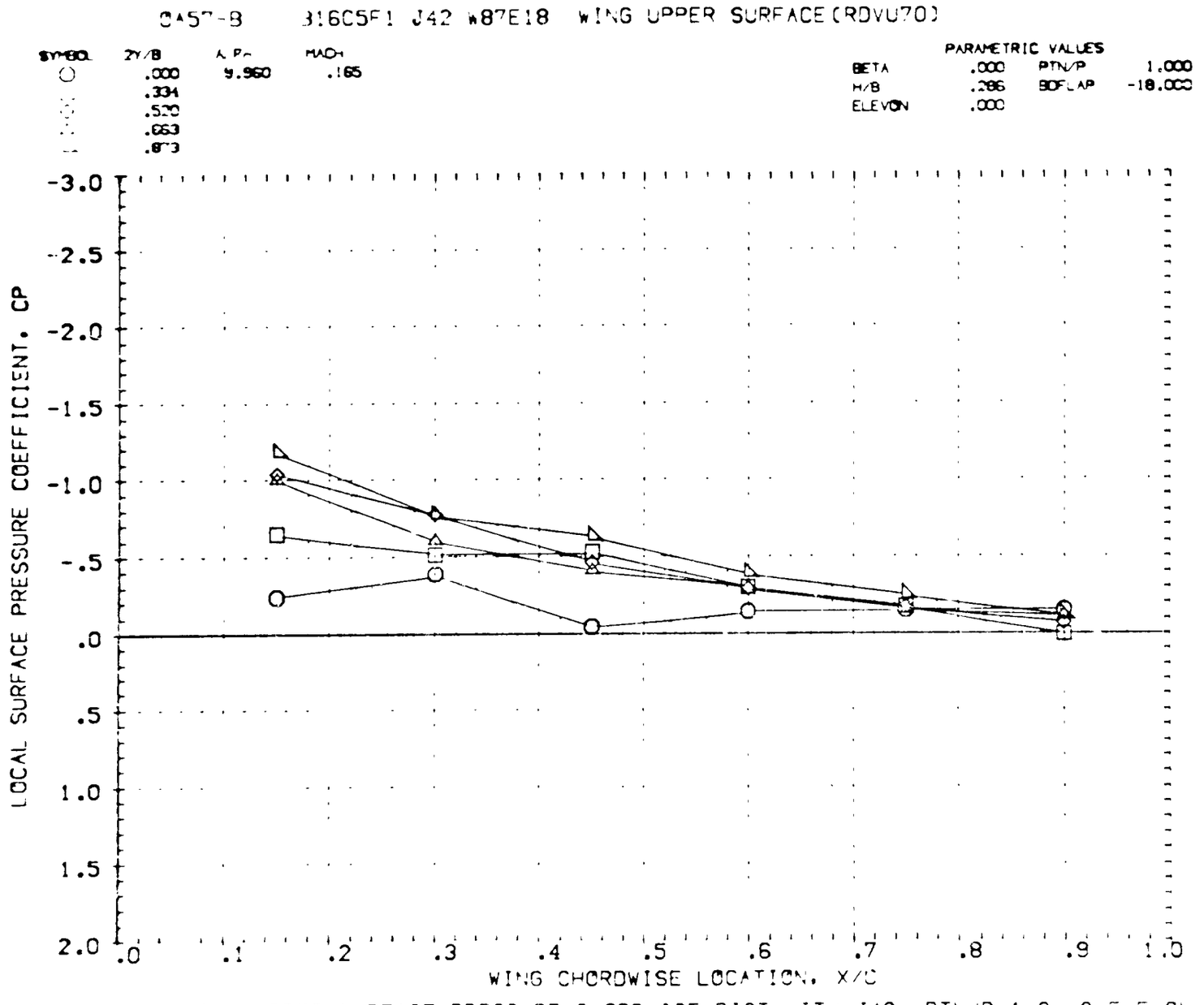


FIG 72 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

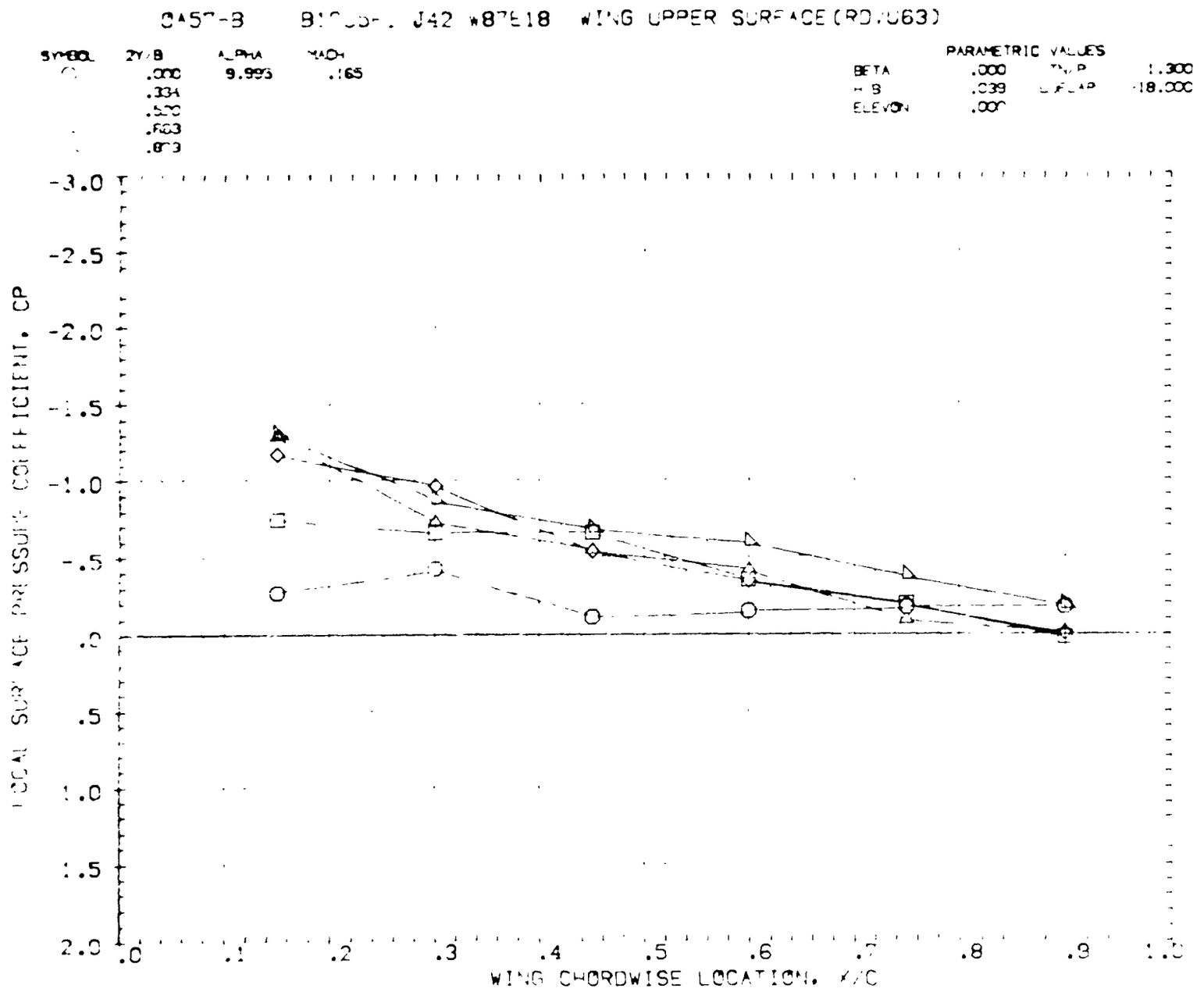


FIG 73 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, BPN, BET .3, 0 ELEVON

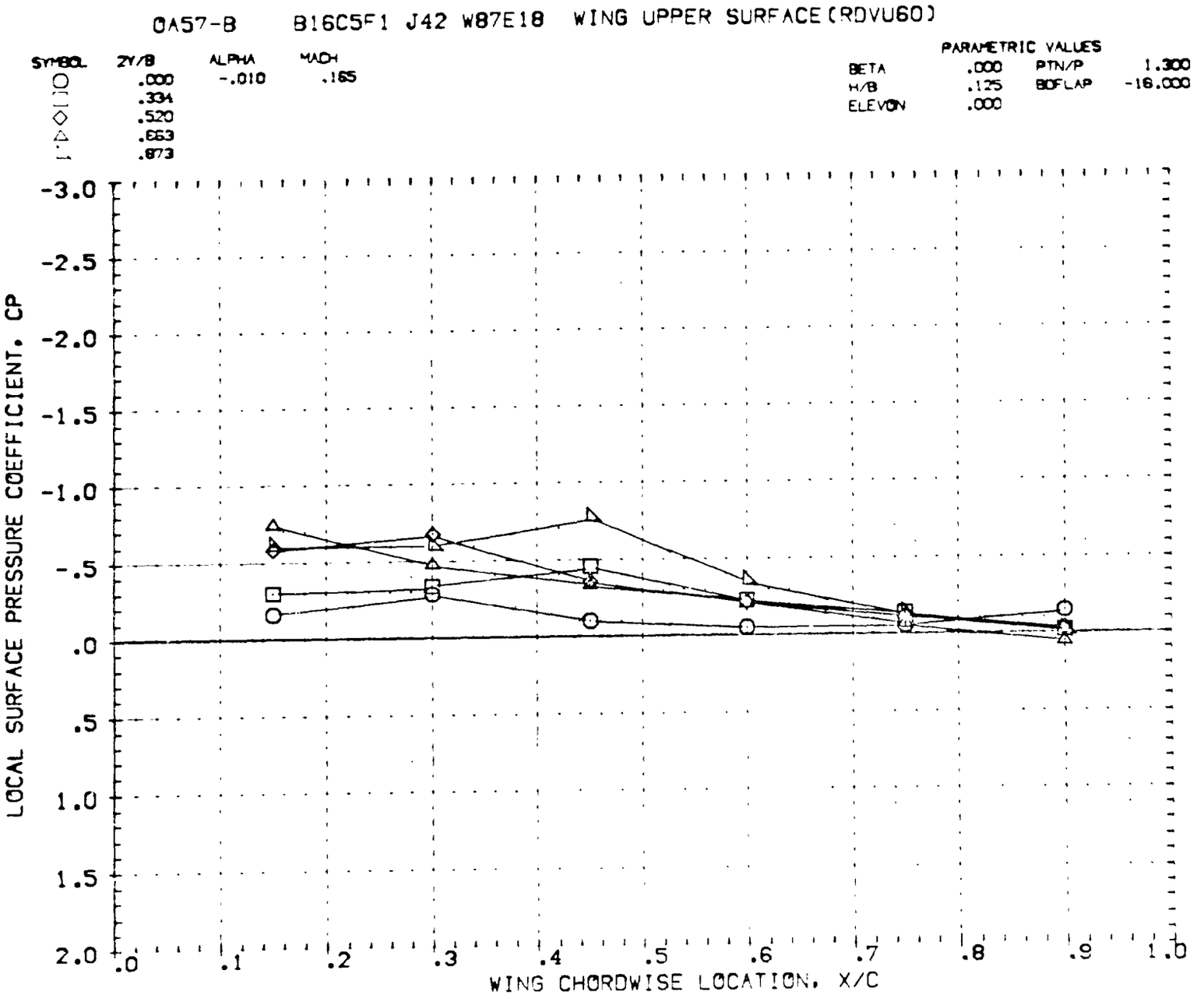


FIG 73 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

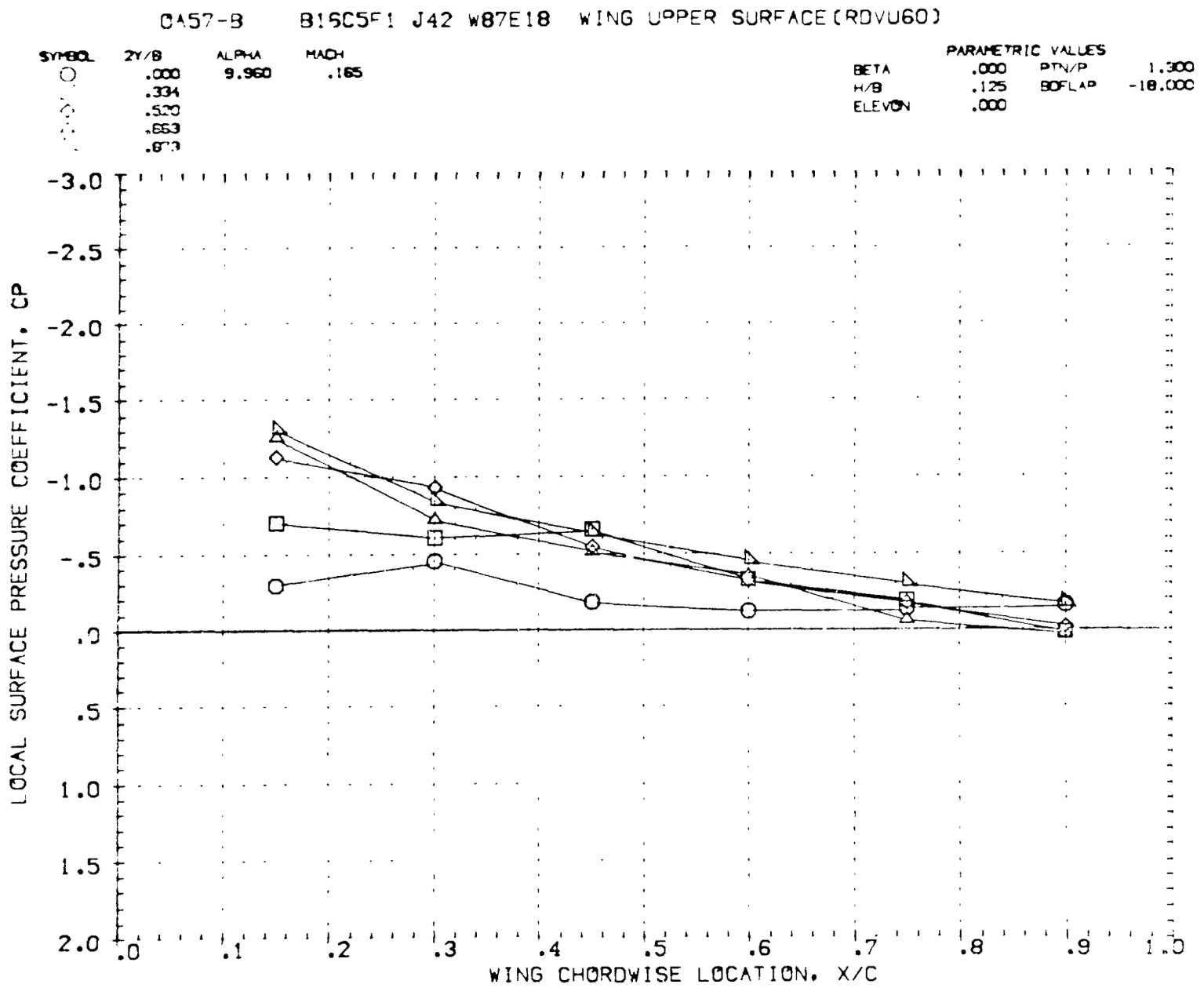


FIG 73 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

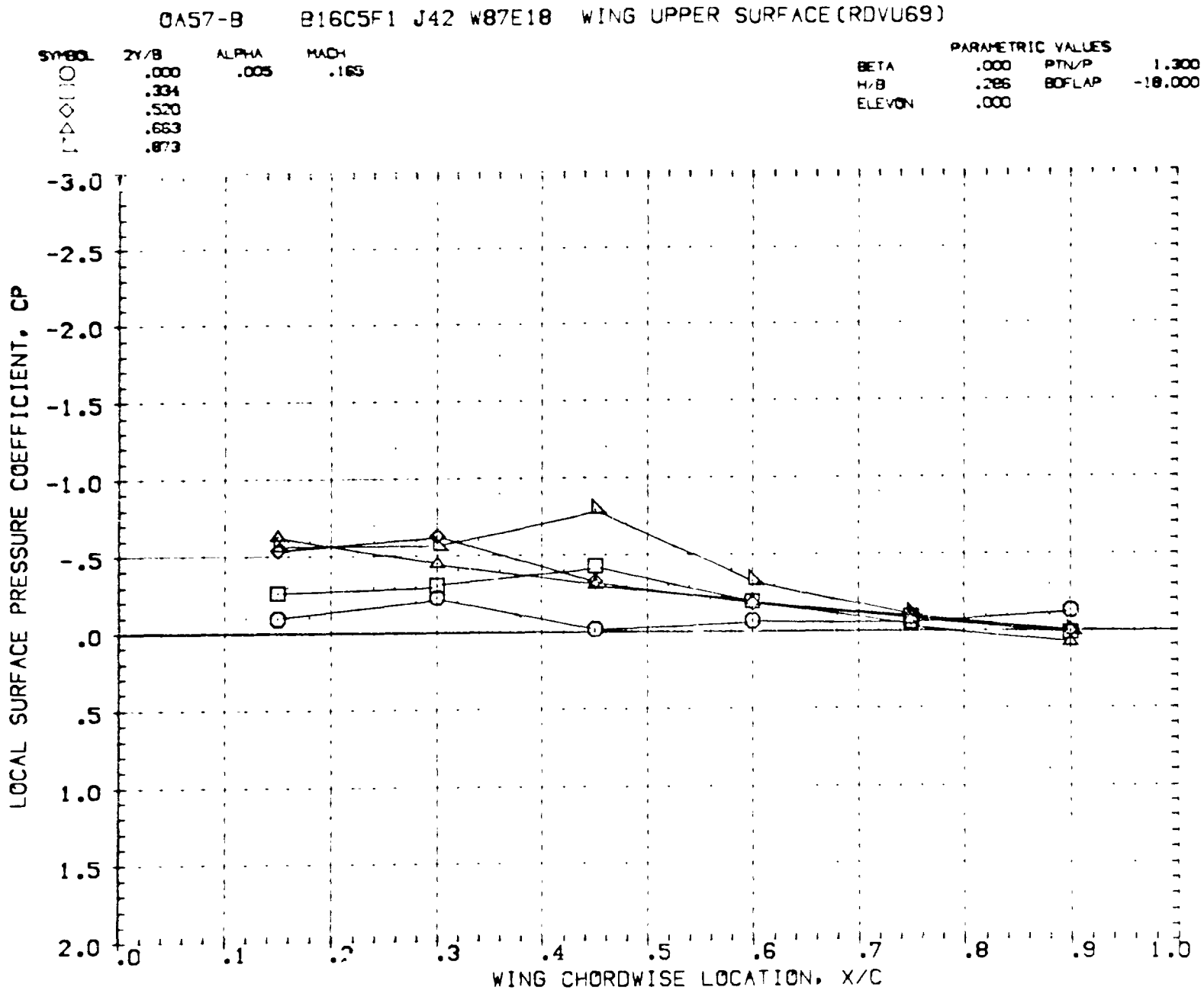


FIG 73 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

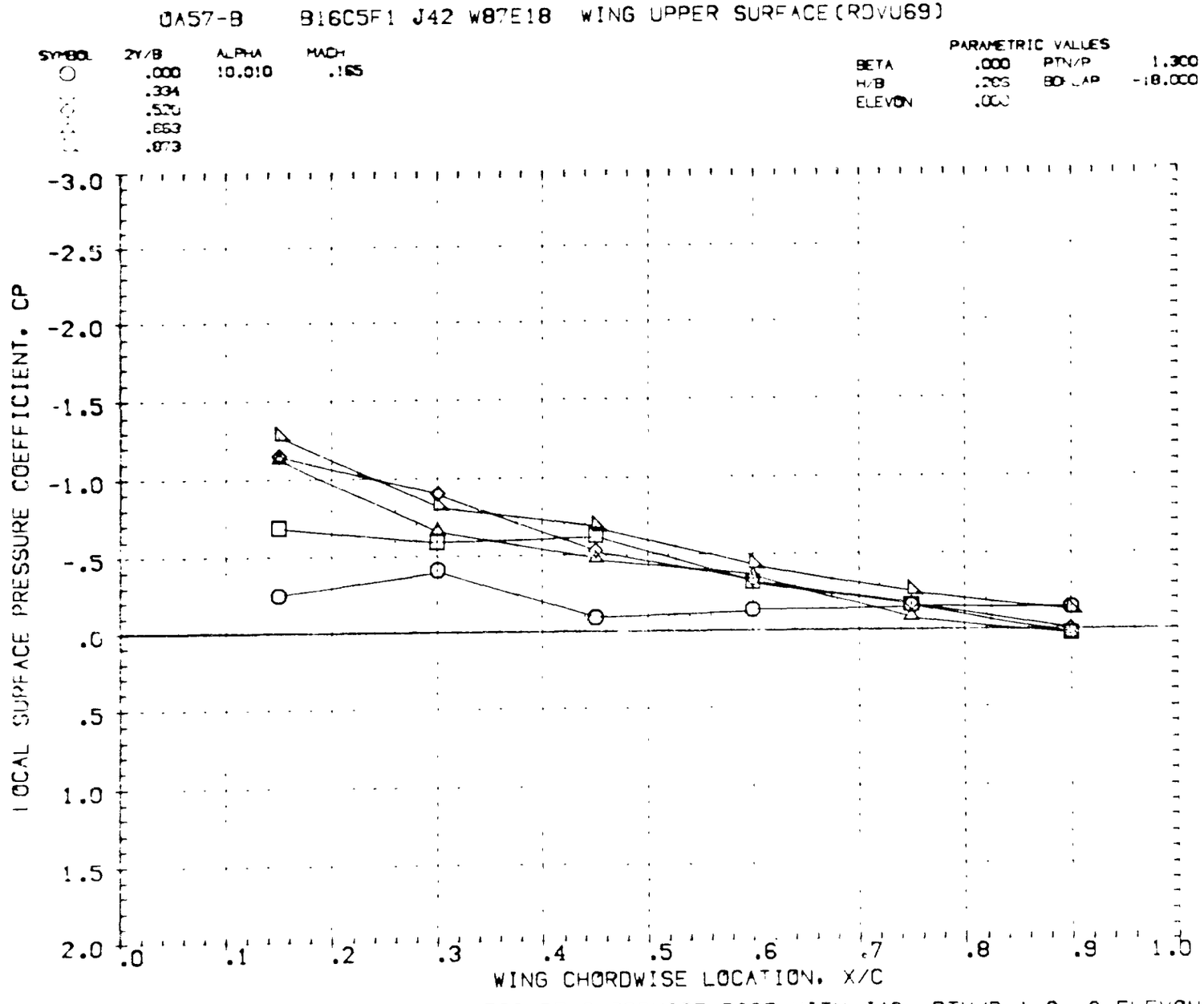


FIG 73 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

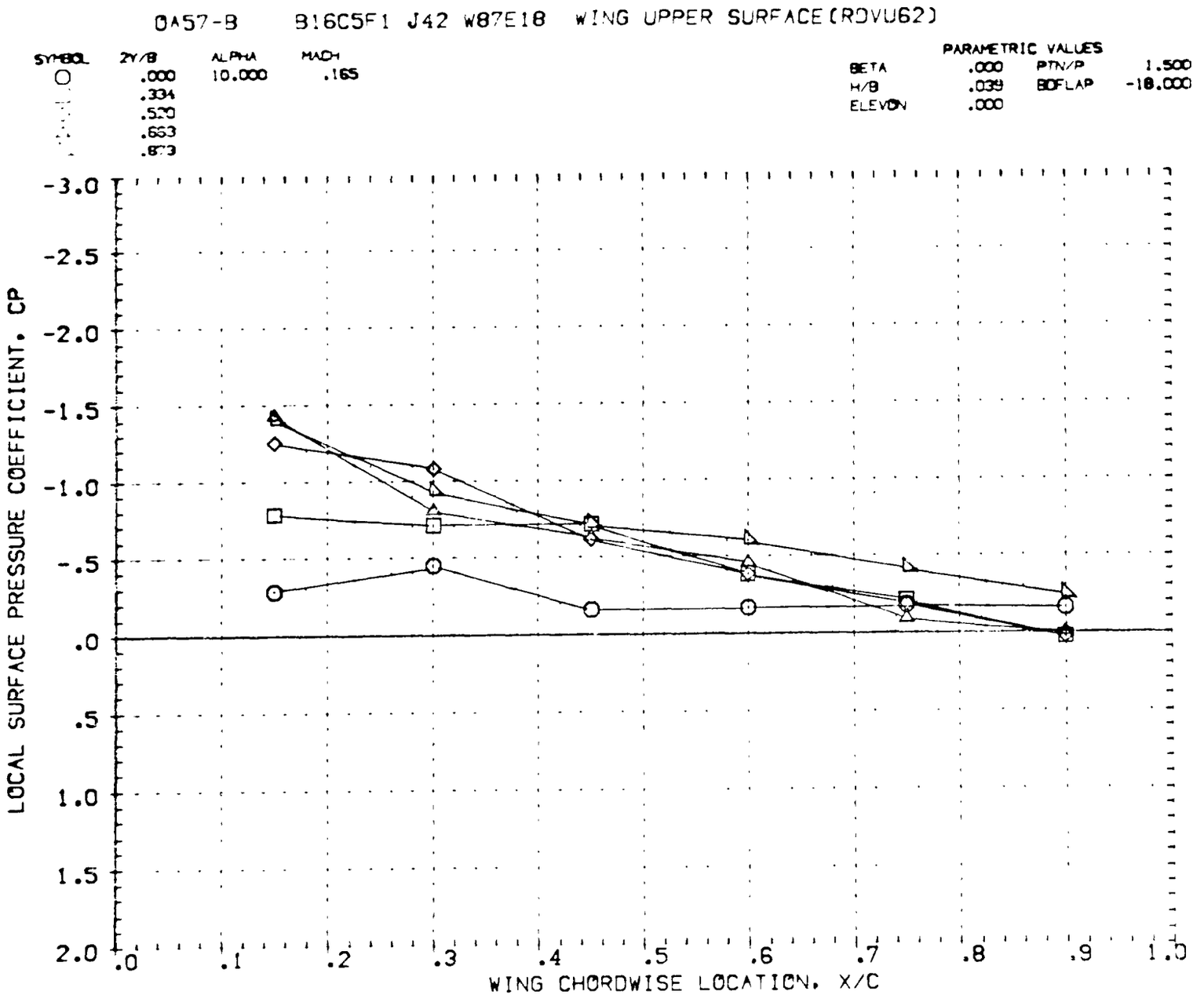


FIG 74 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

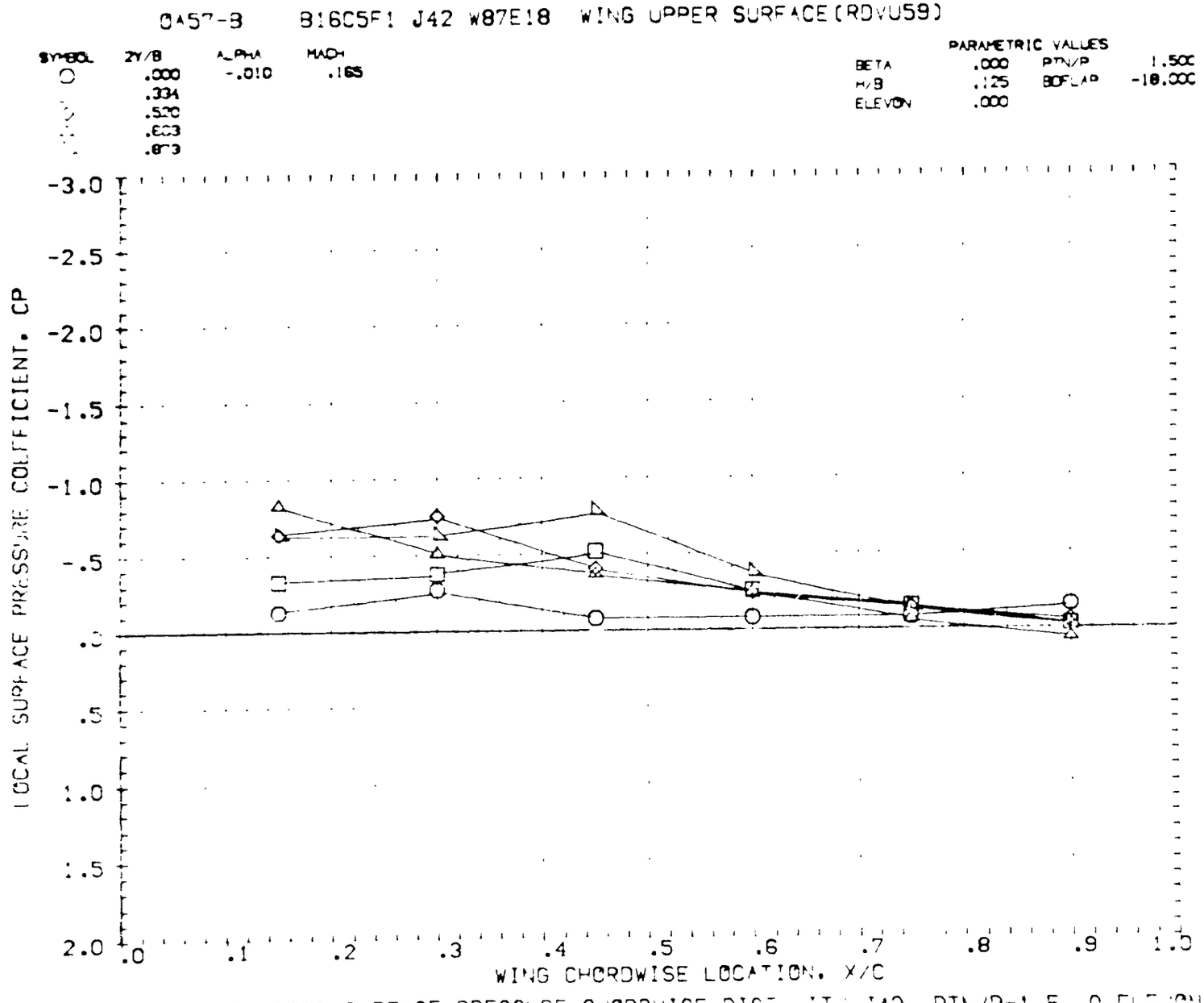


FIG 74 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

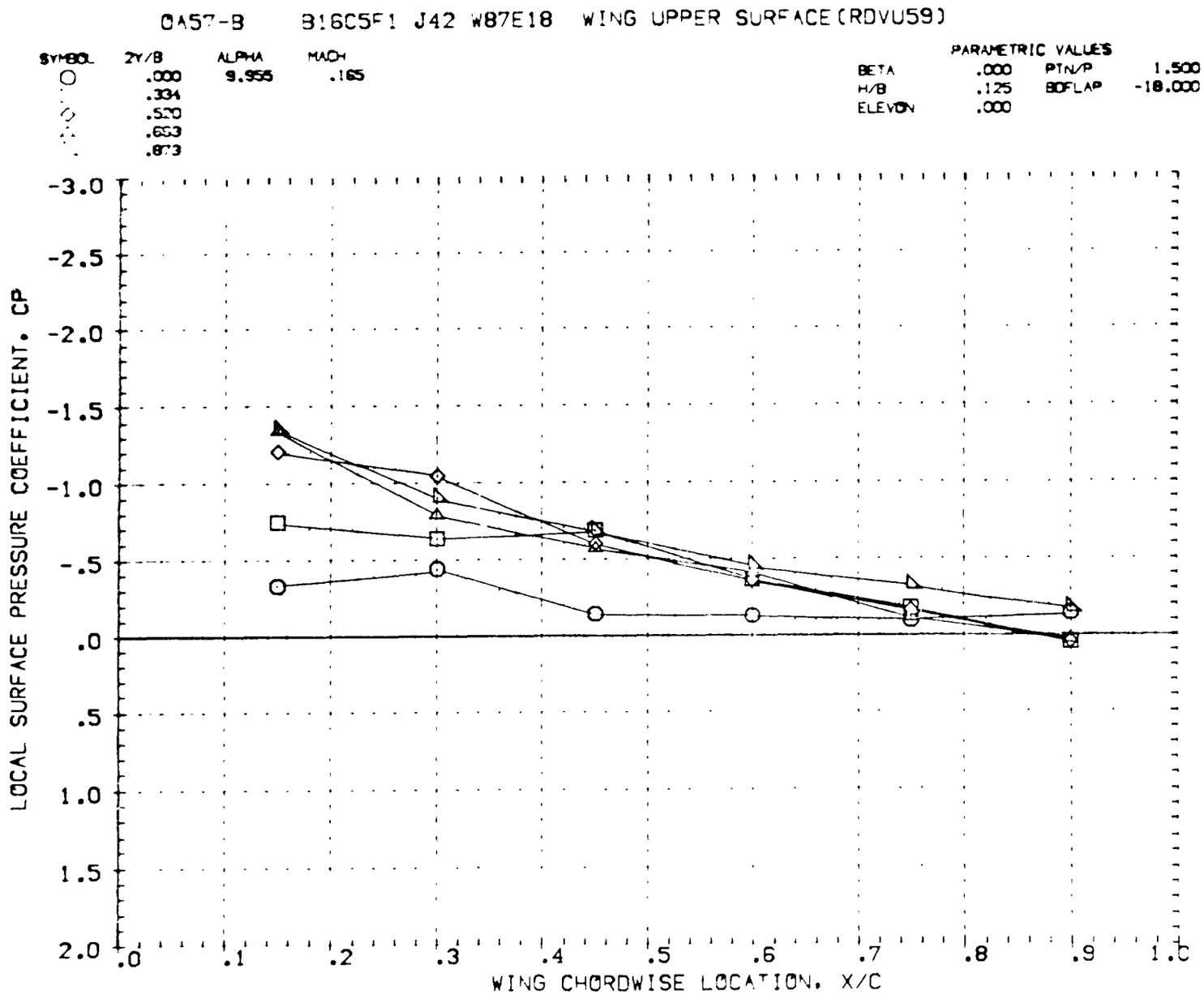


FIG 74 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

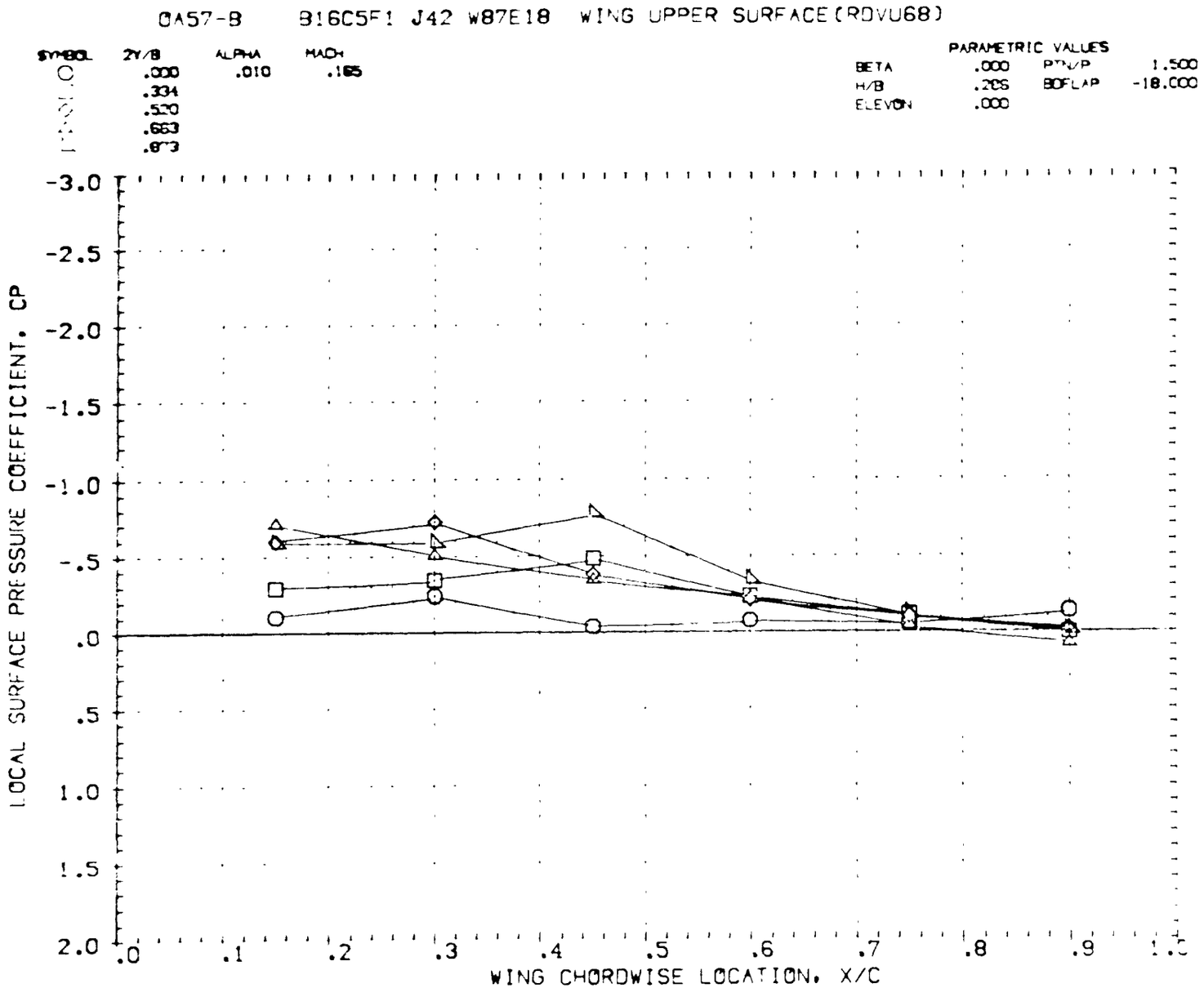


FIG 74 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

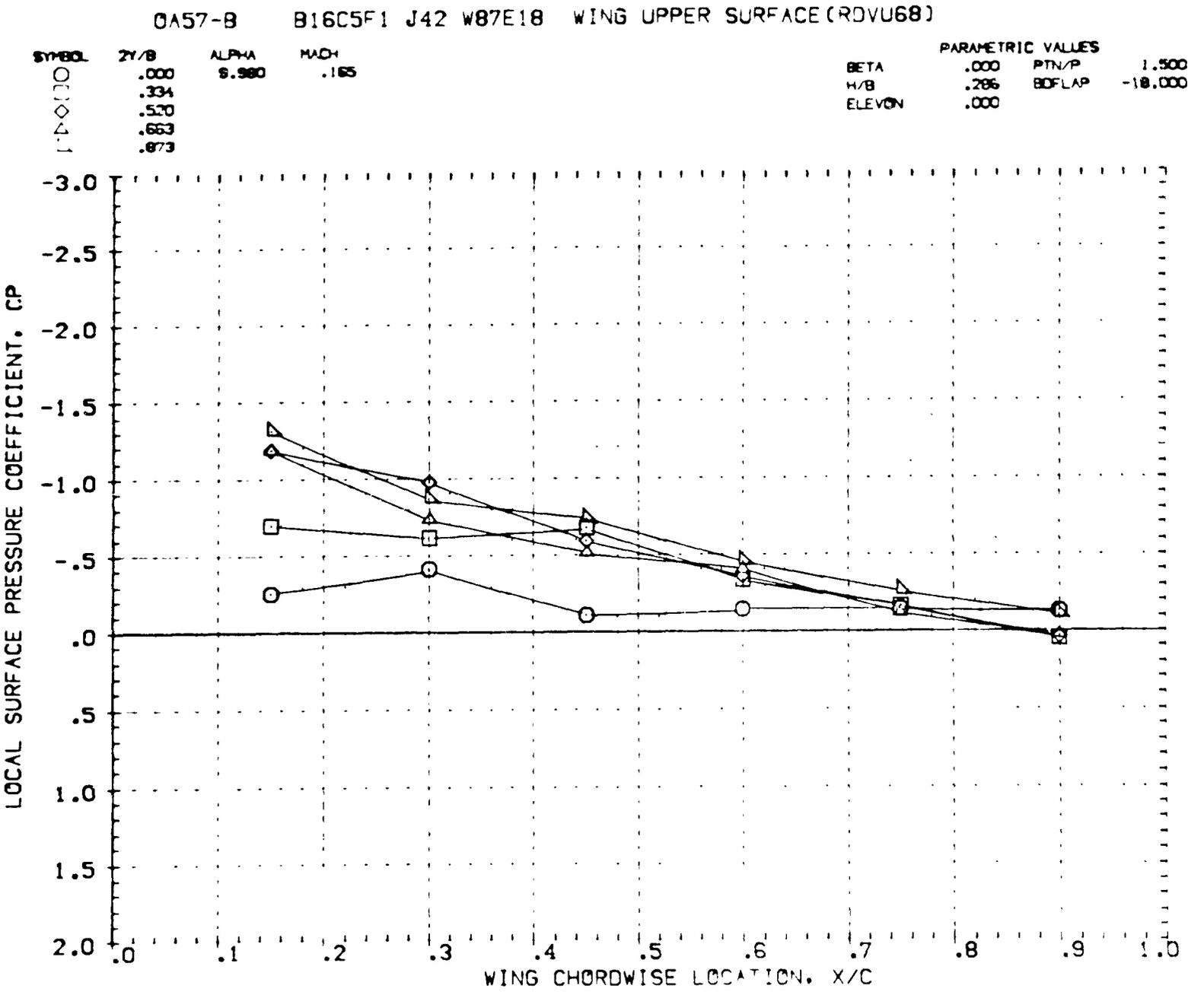


FIG 74 WING UPPER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

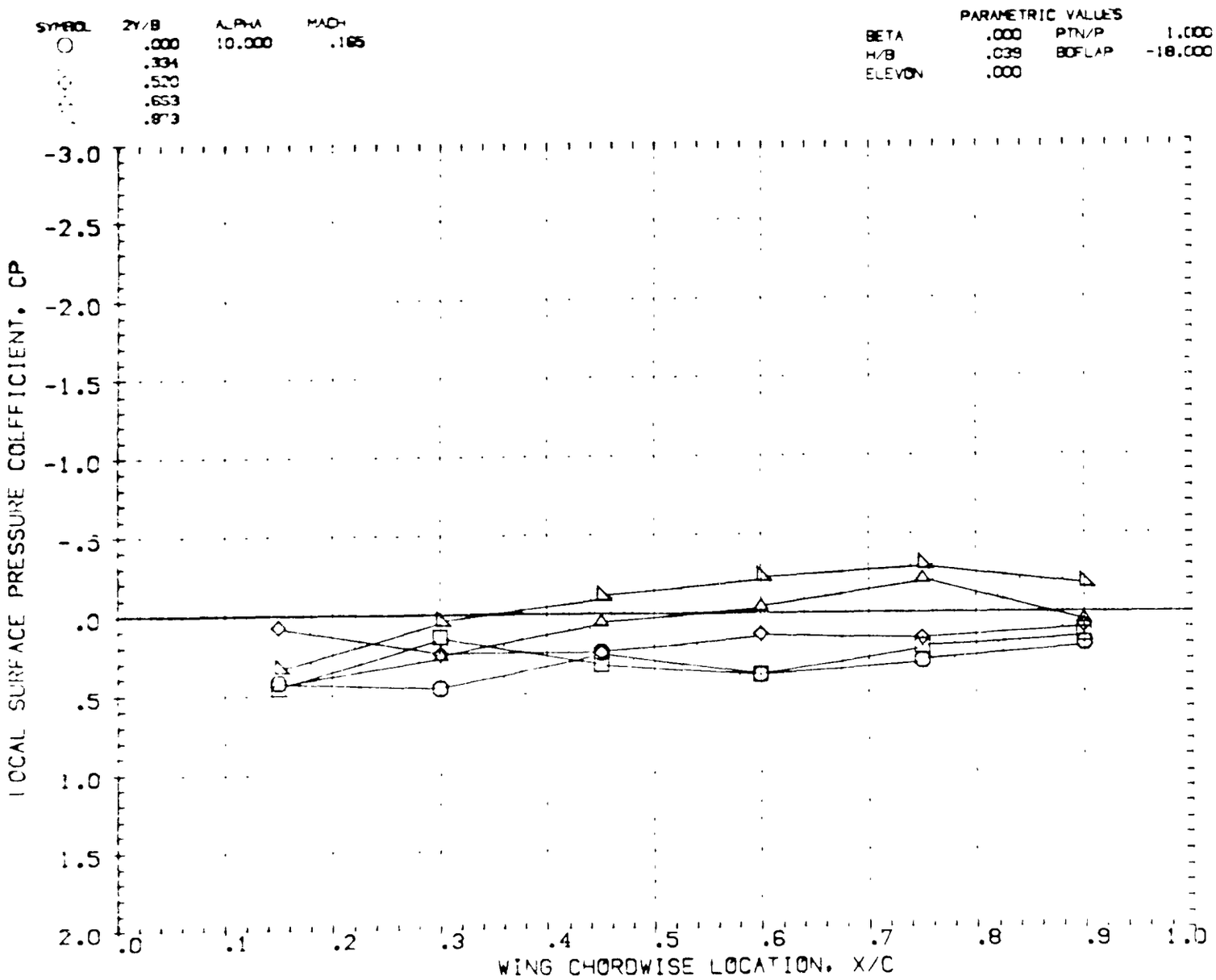


FIG 75 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

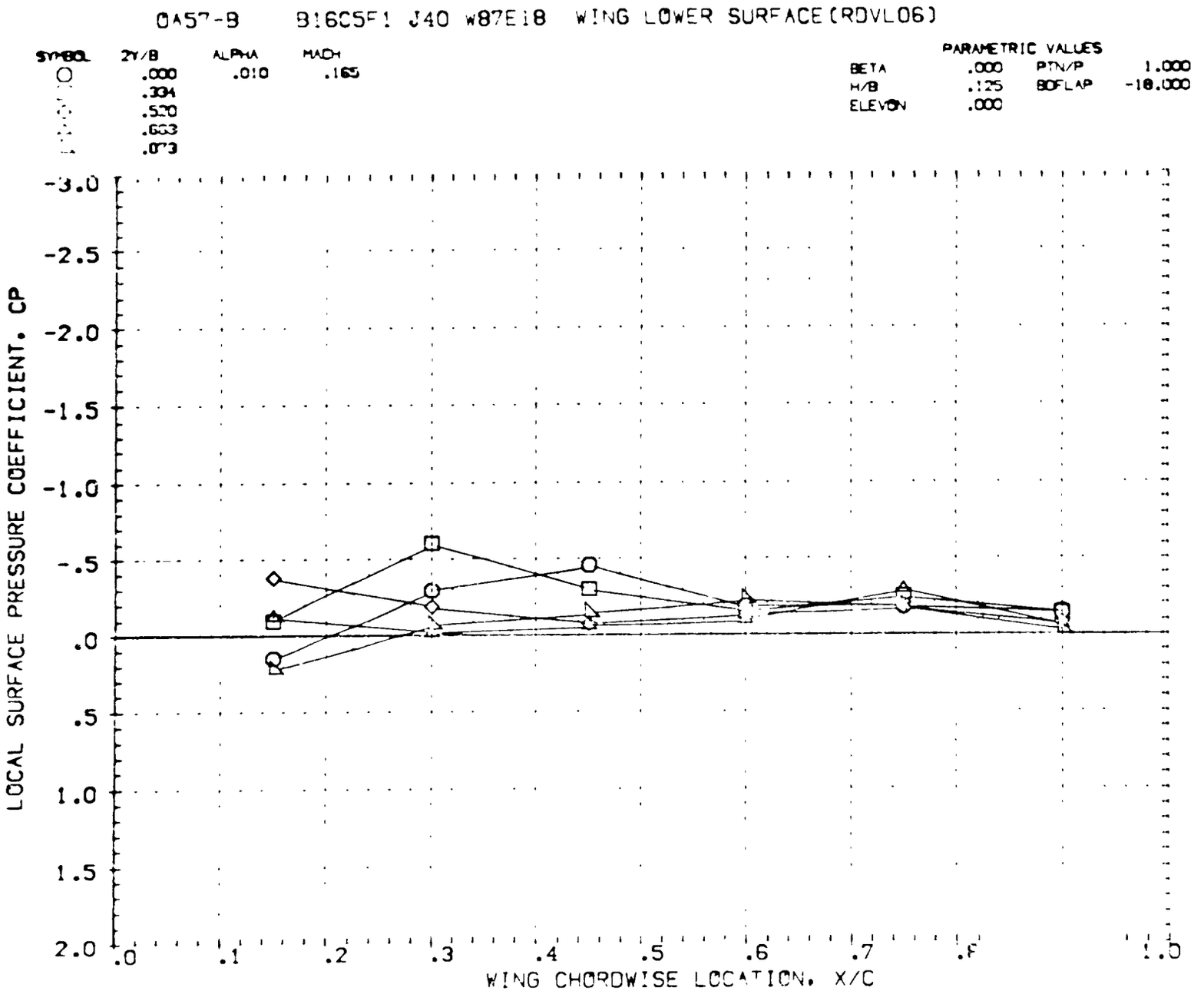


FIG 75 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/ J ELEVON

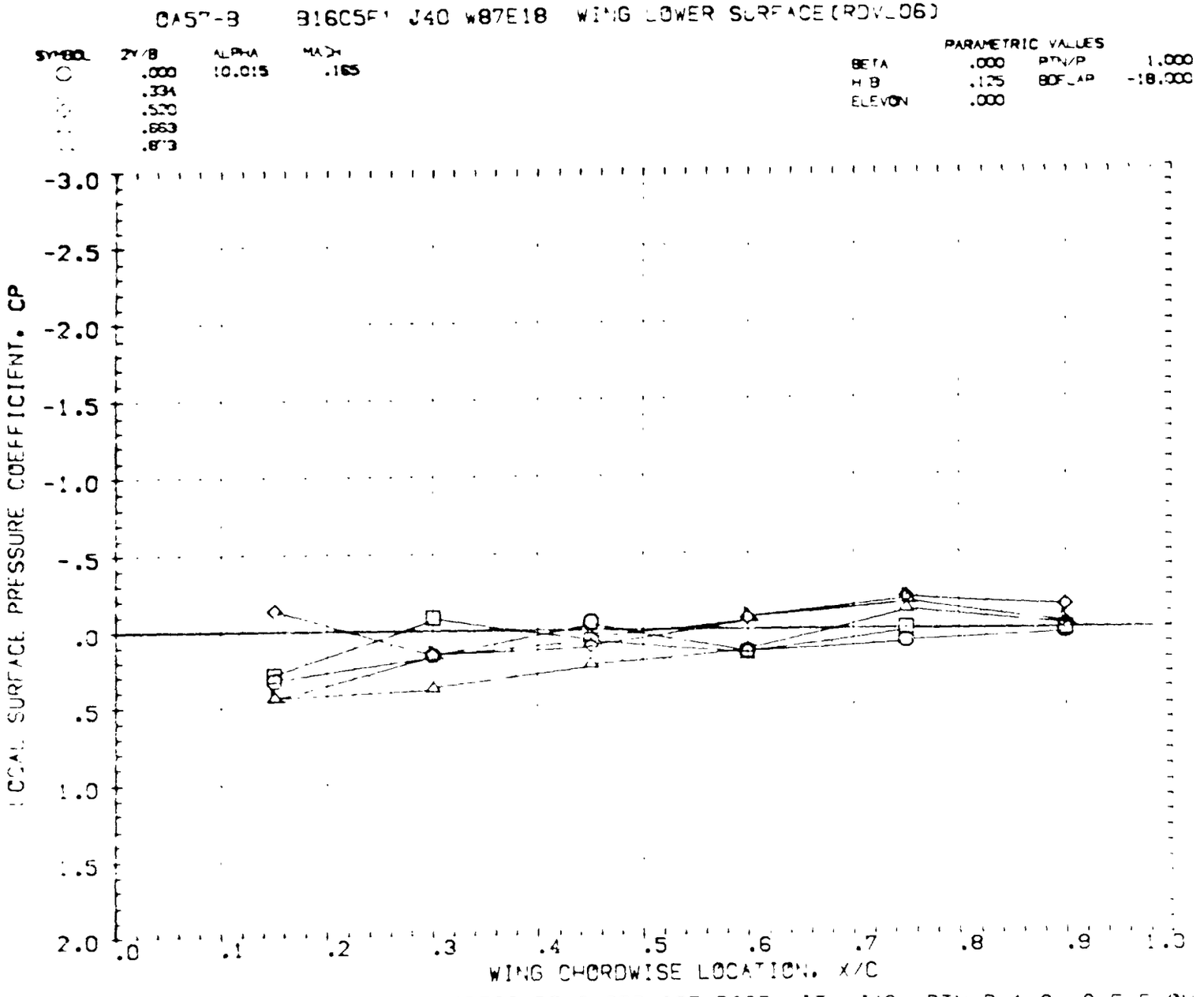


FIG 75 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN P=1.0, 0 ELEVON

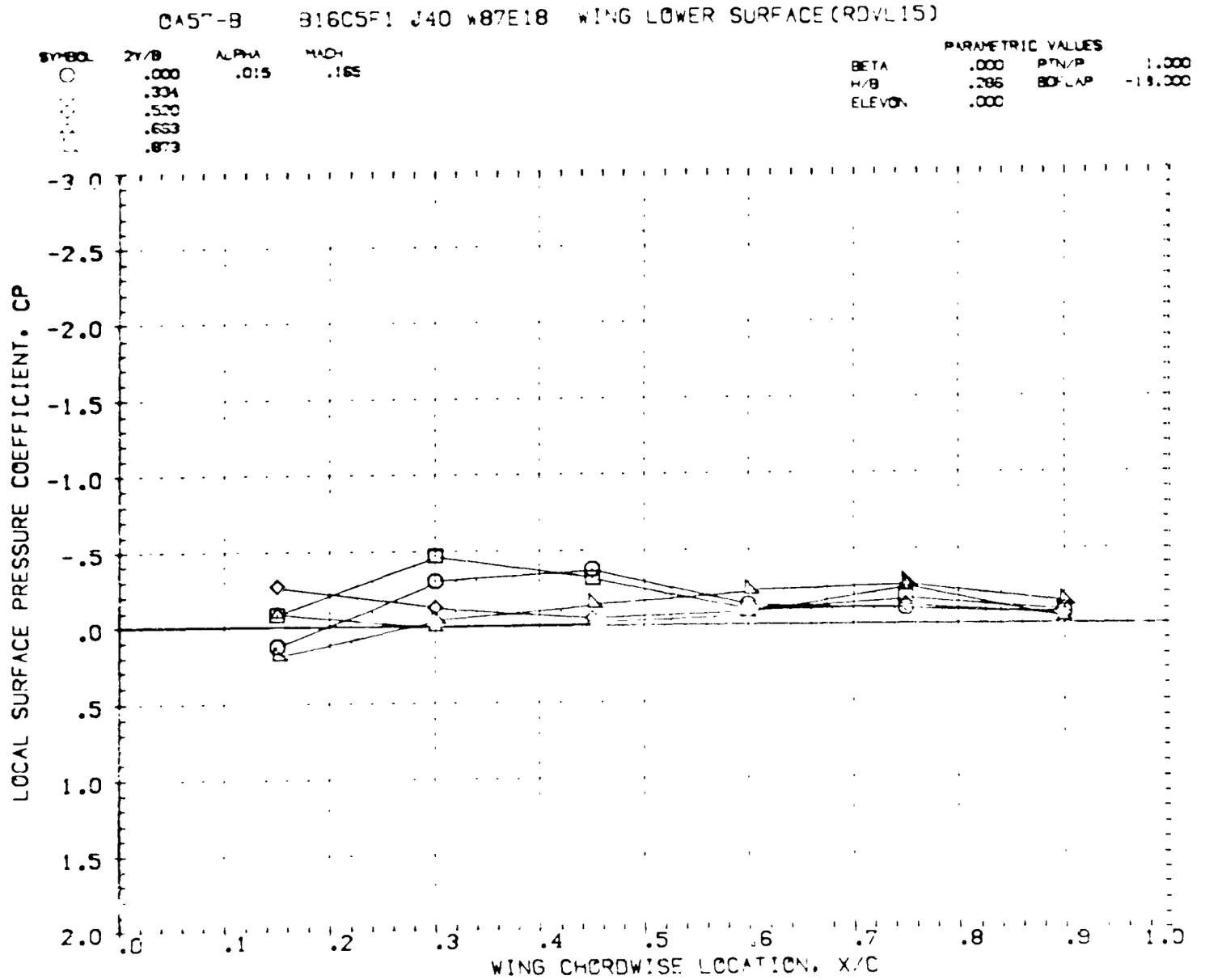


FIG 75 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.00, 0 ELEVON

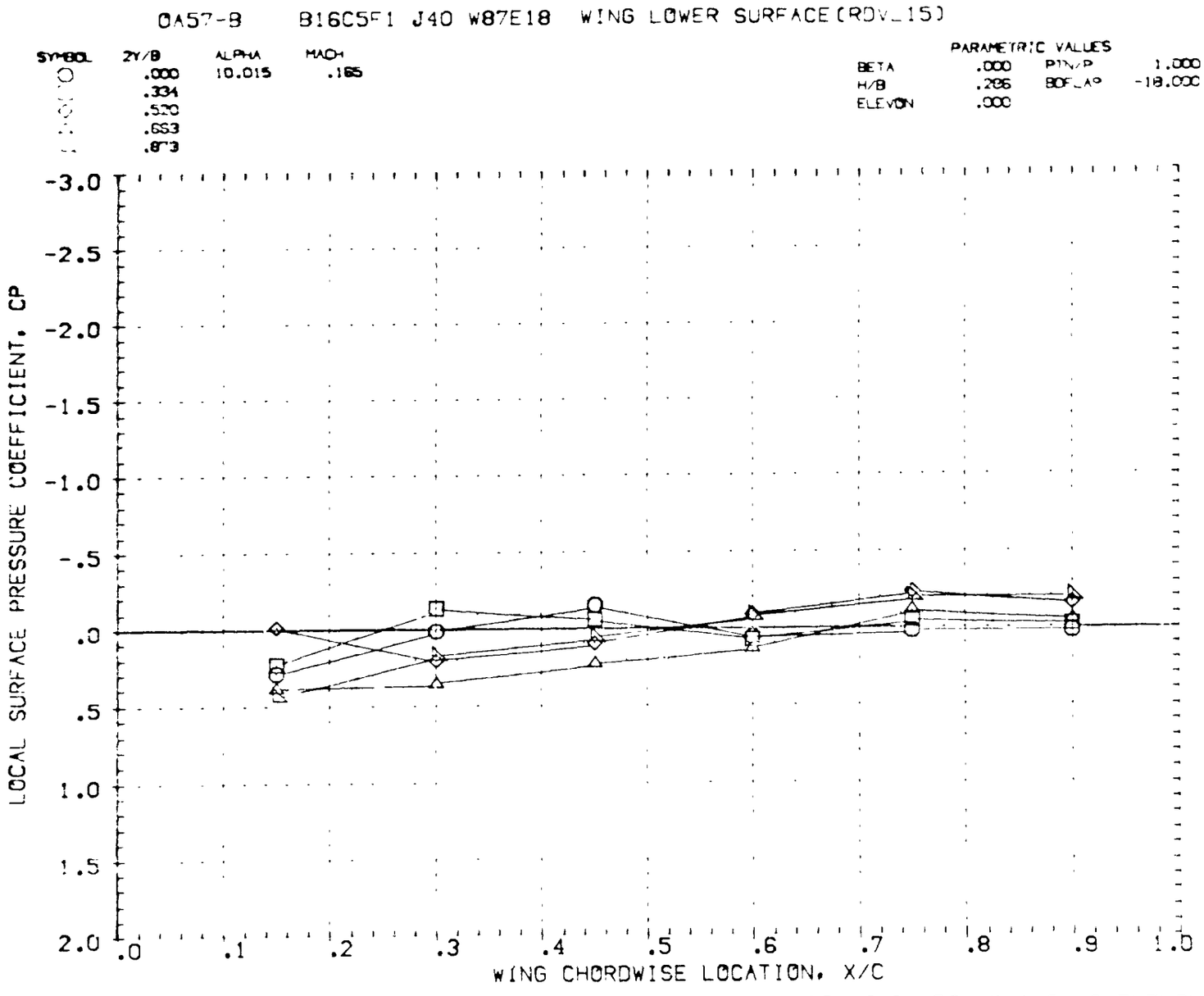


FIG 75 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

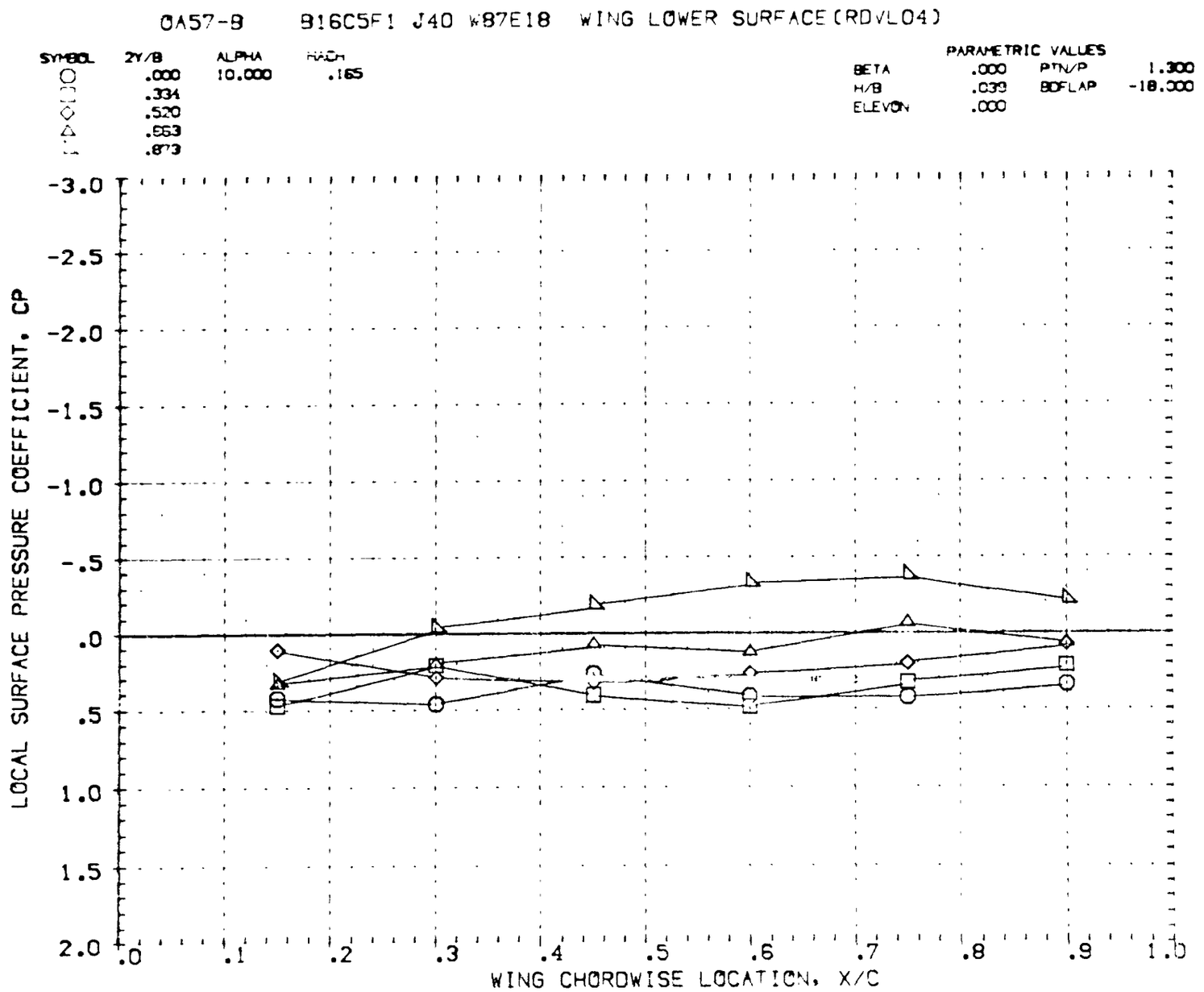


FIG 76 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVC.

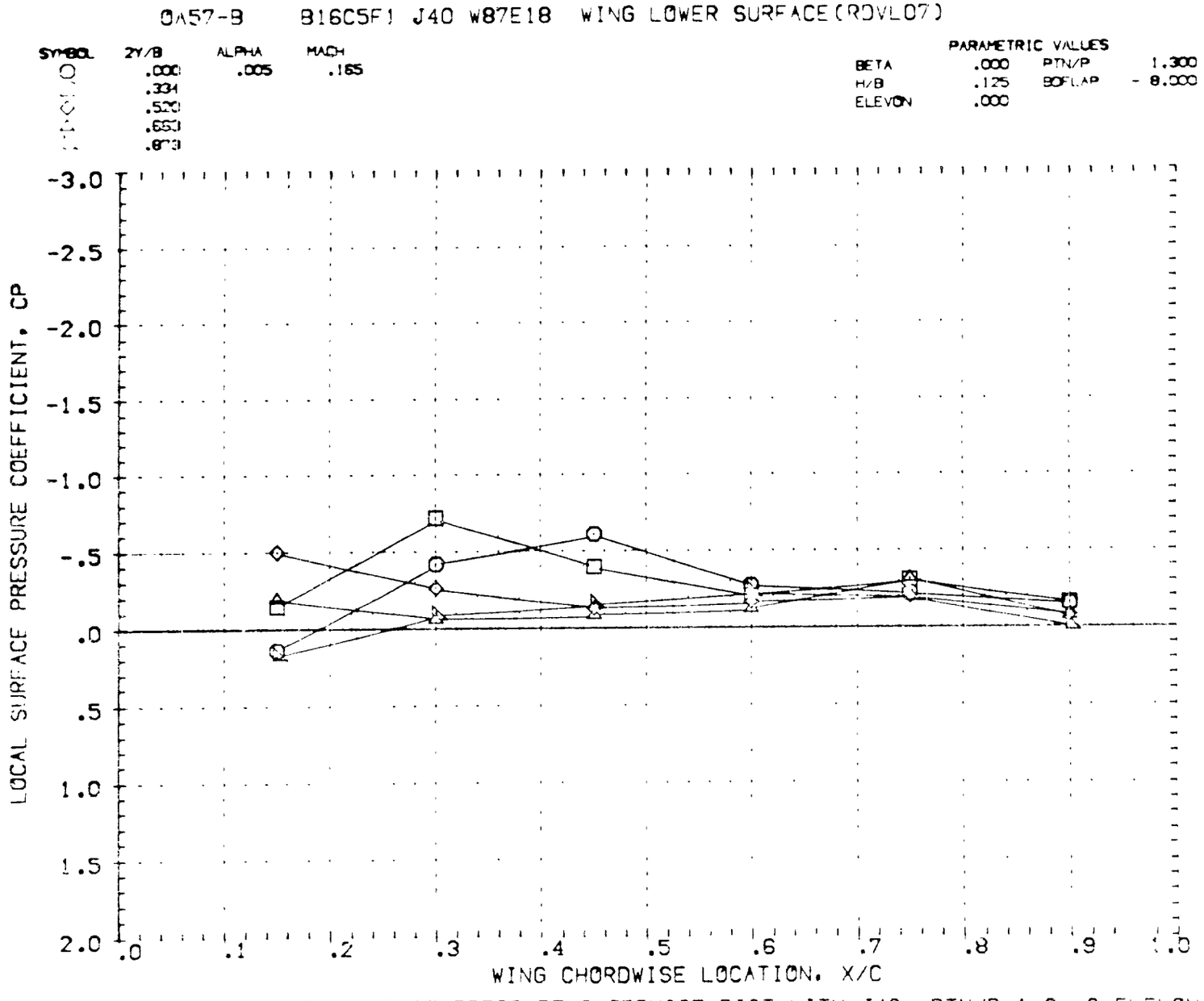


FIG 76 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

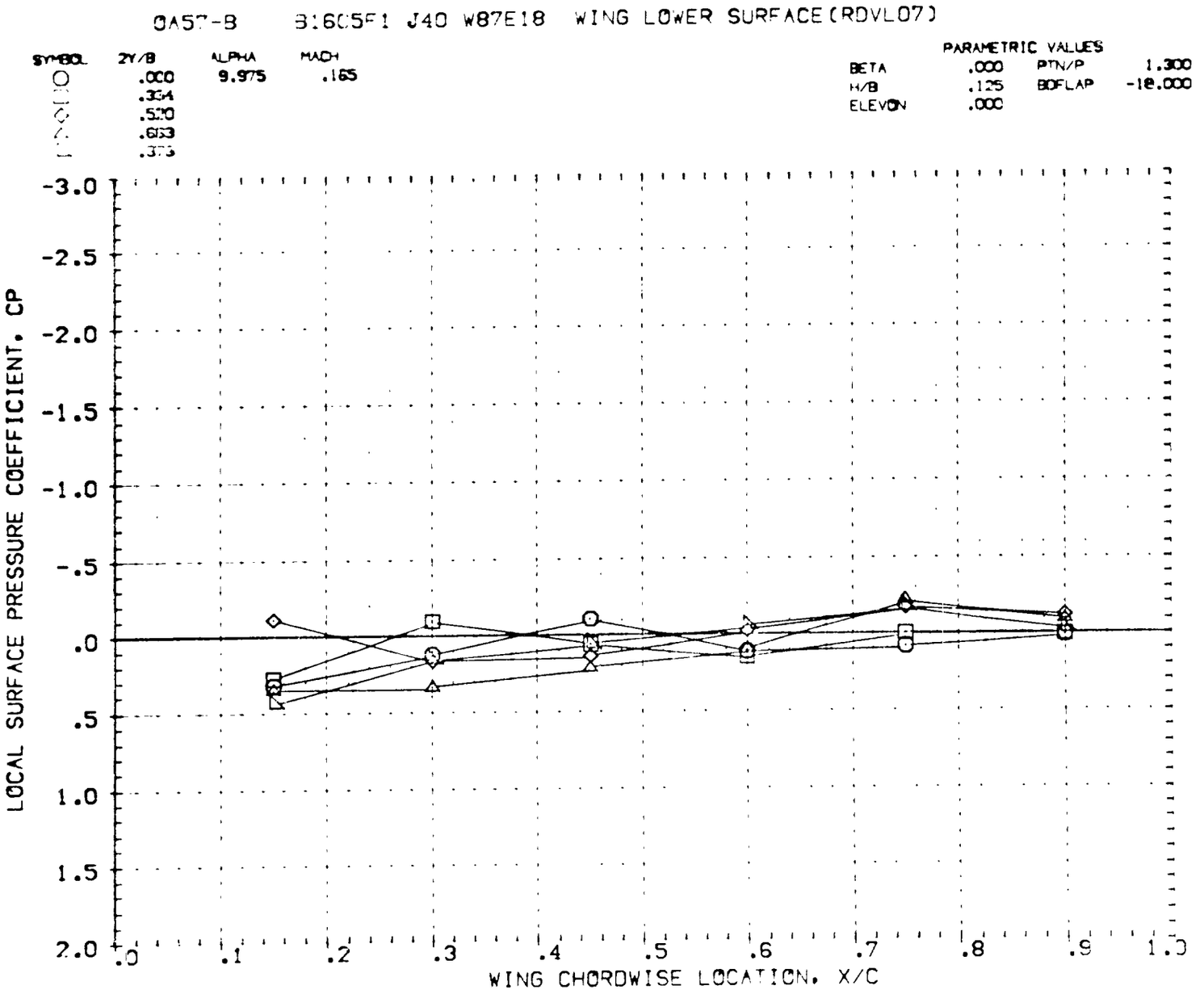


FIG 76 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

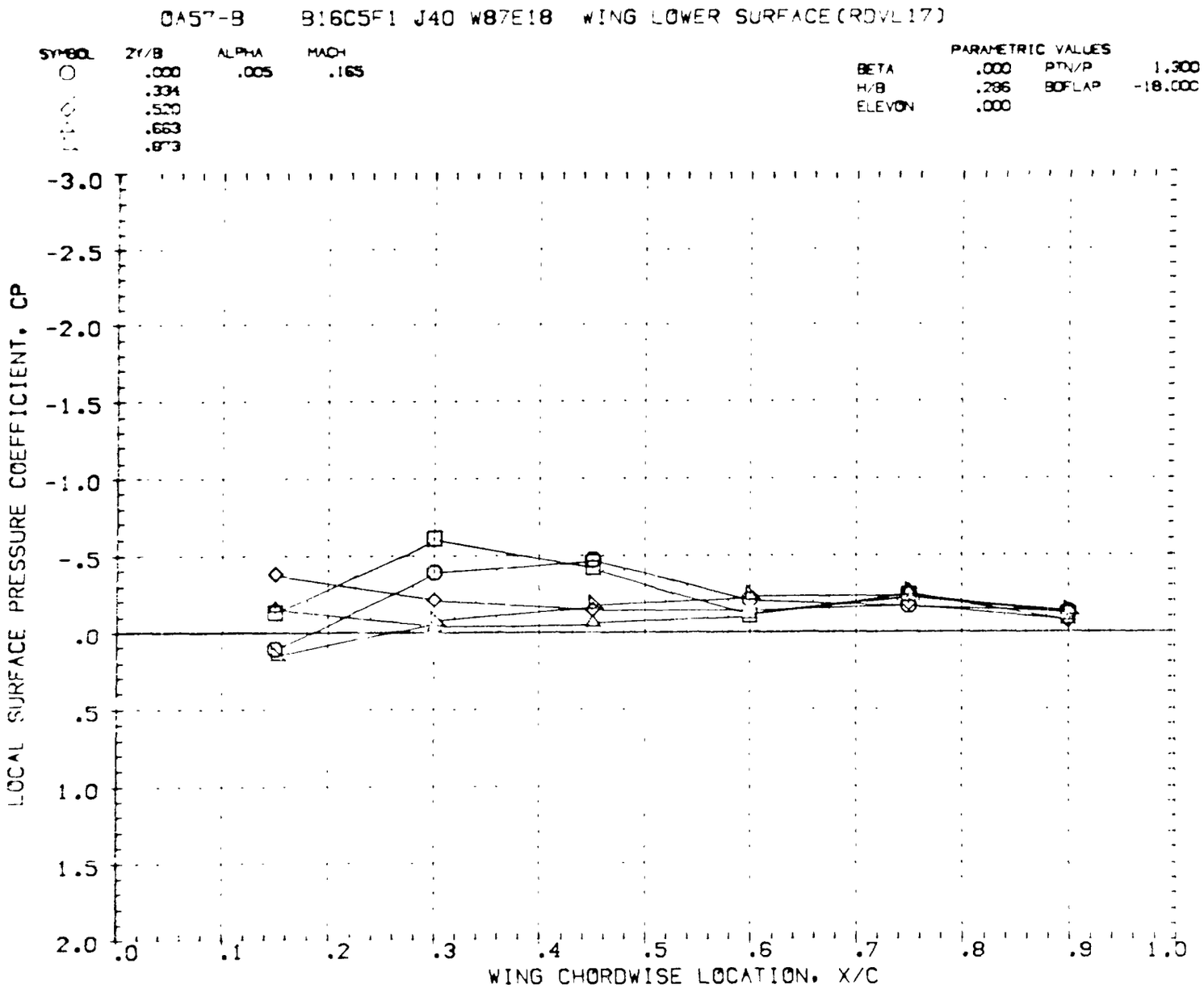


FIG 76 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

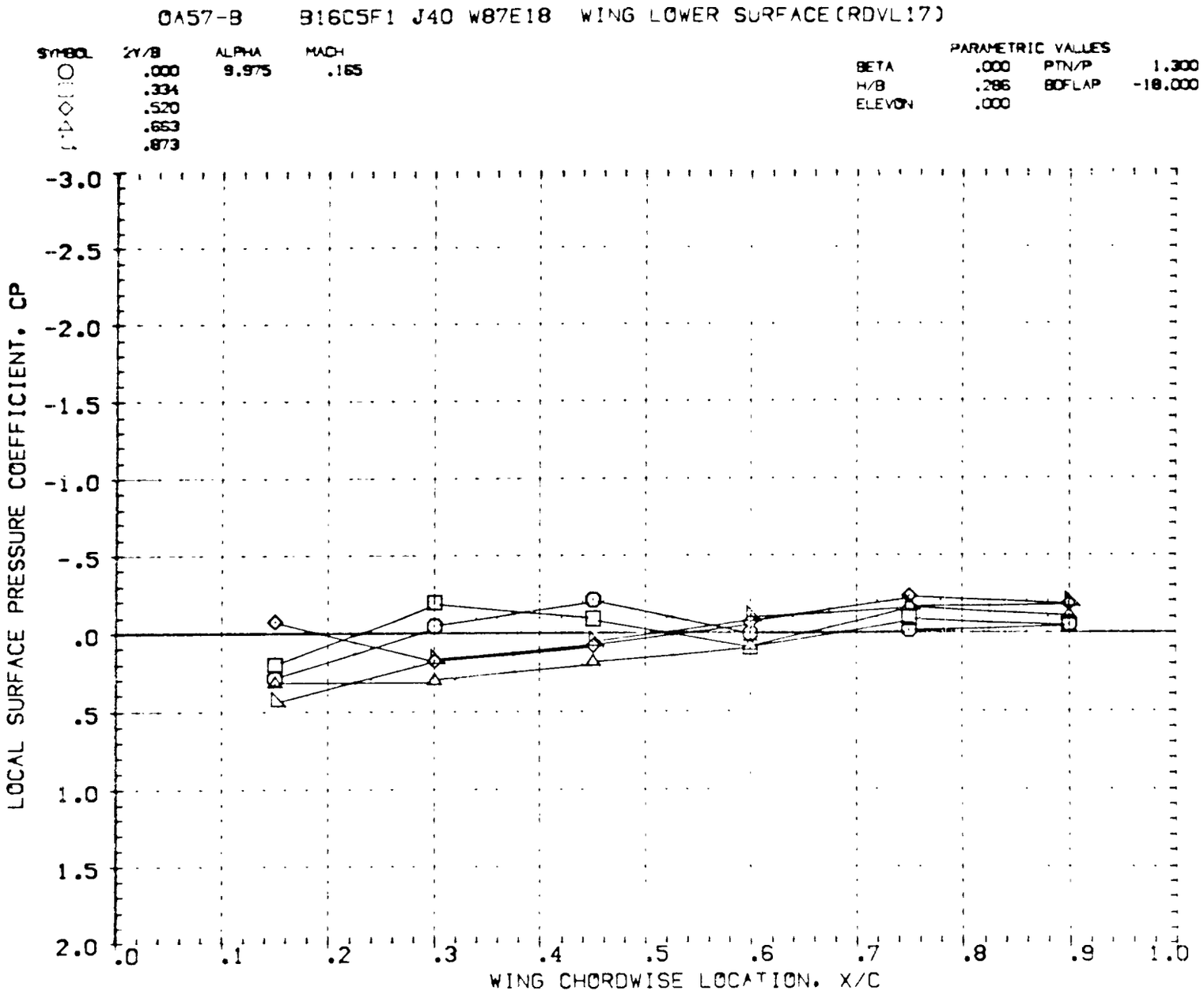


FIG 76 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

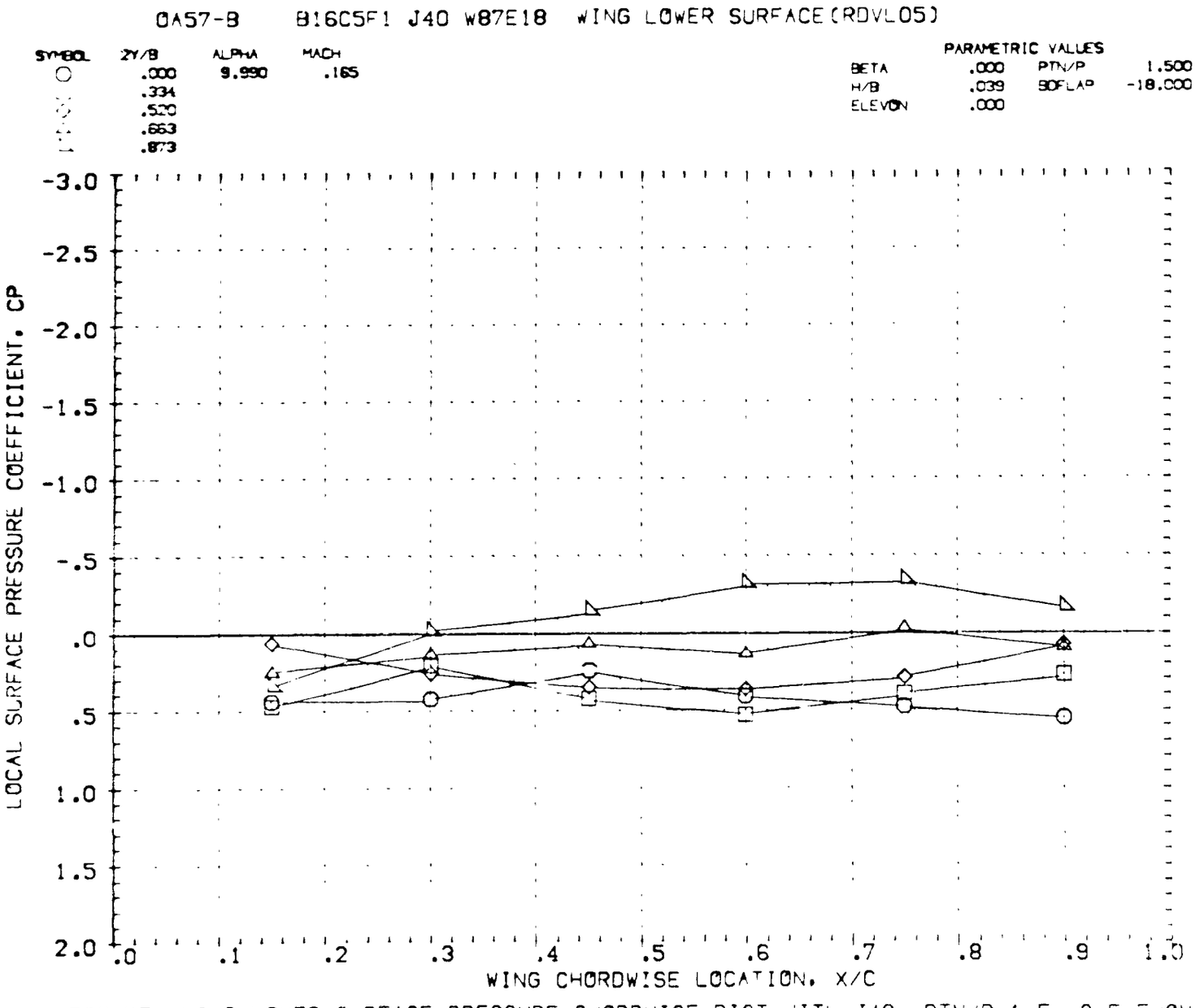


FIG 77 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

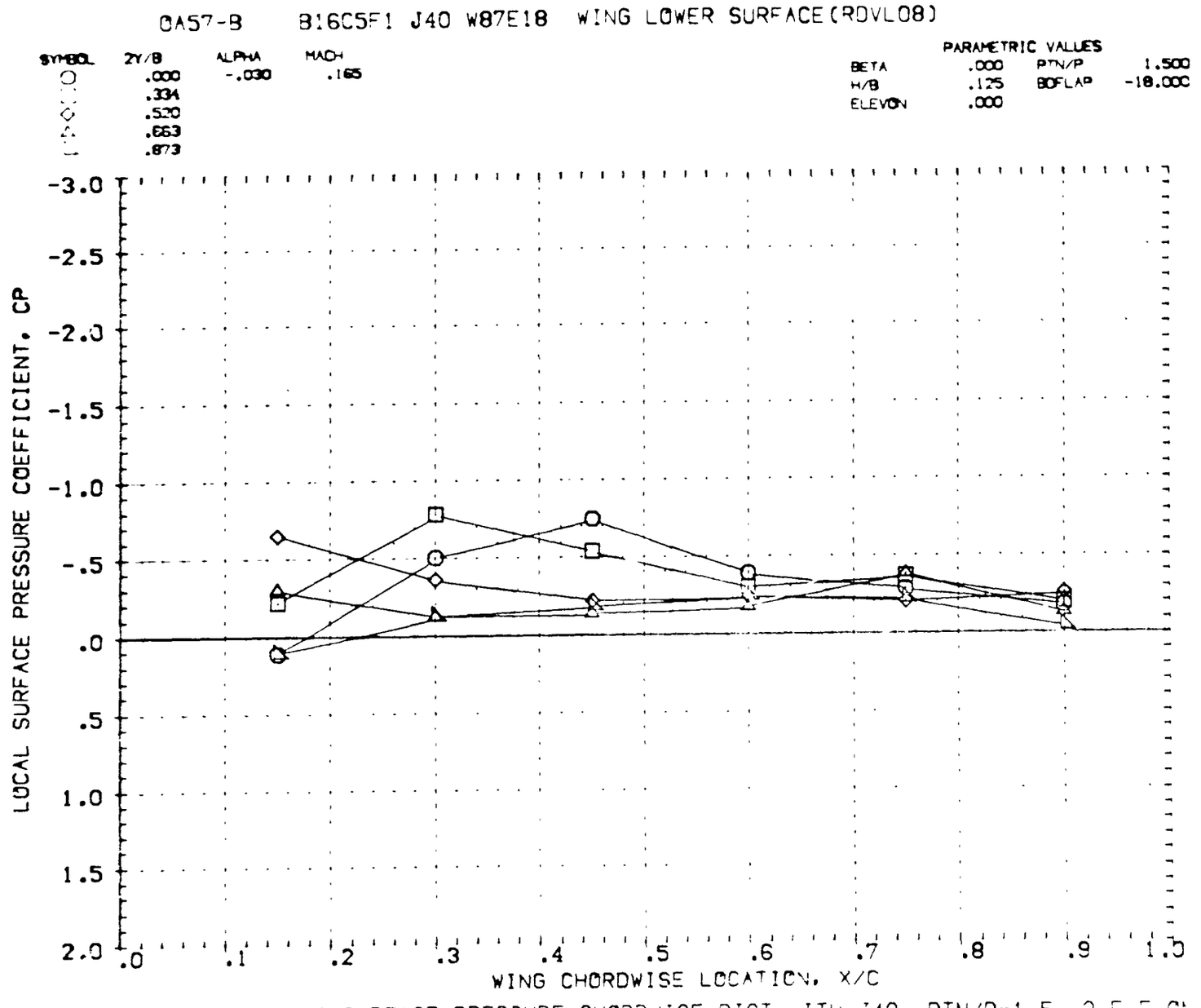


FIG 77 WING LOWER SURFACE PRESSURE CHORDWISE DIST ITH J40, PTN/P=1.5, 0 ELEVON

CASE-B B1605F1 J40 W87E18 WING LOWER SURFACE(RD/LOB)

SYMBOL	2Y/B
○	.000
	.334
	.520
	.693
	.873

ALPHA 9.980 MACH .165

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H/B	.125	BOFLAP	-10.000
ELEVON	.000		

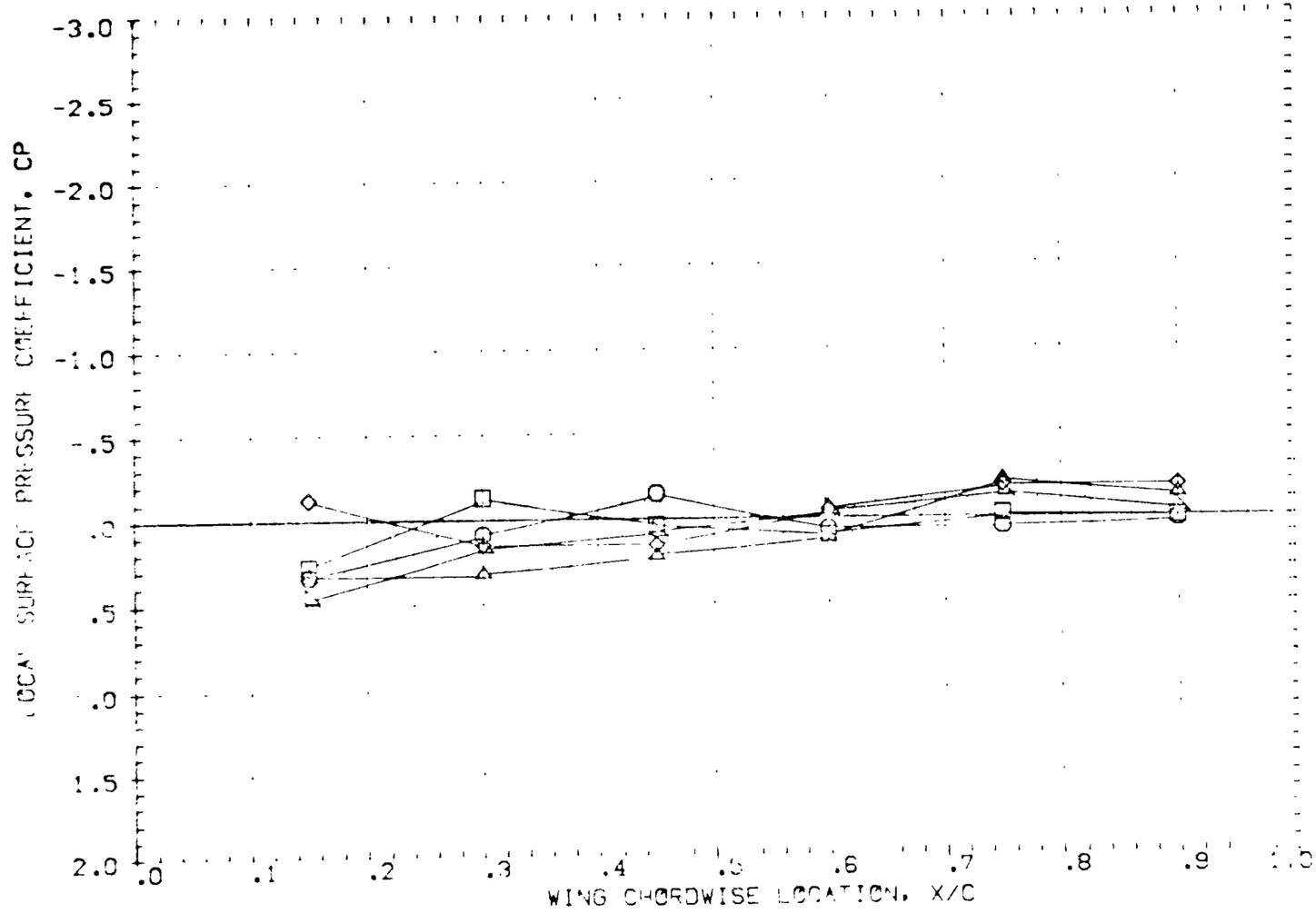


FIG 77 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

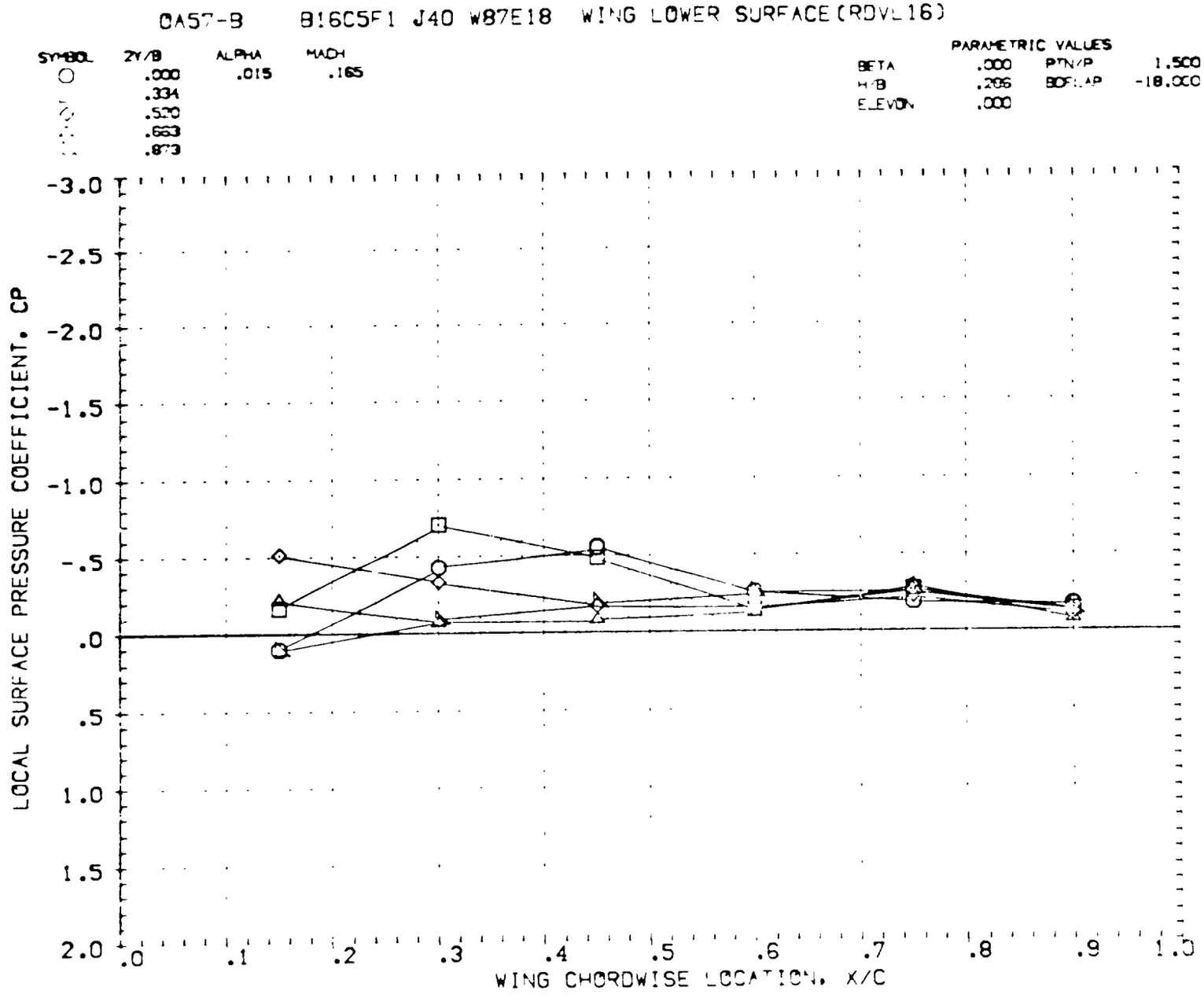


FIG 77 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

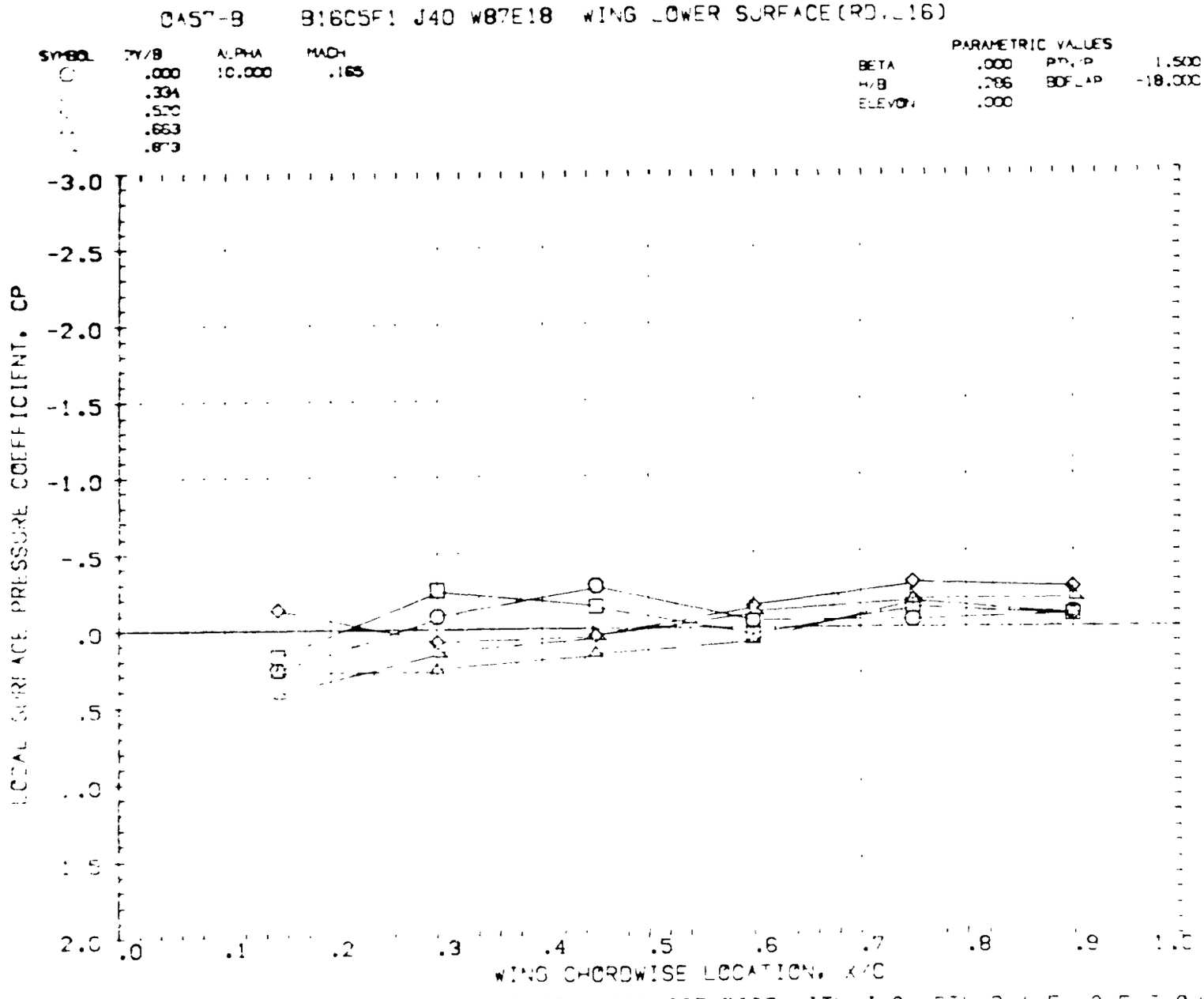


FIG 77 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTY P=1.5, 0 ELEVON

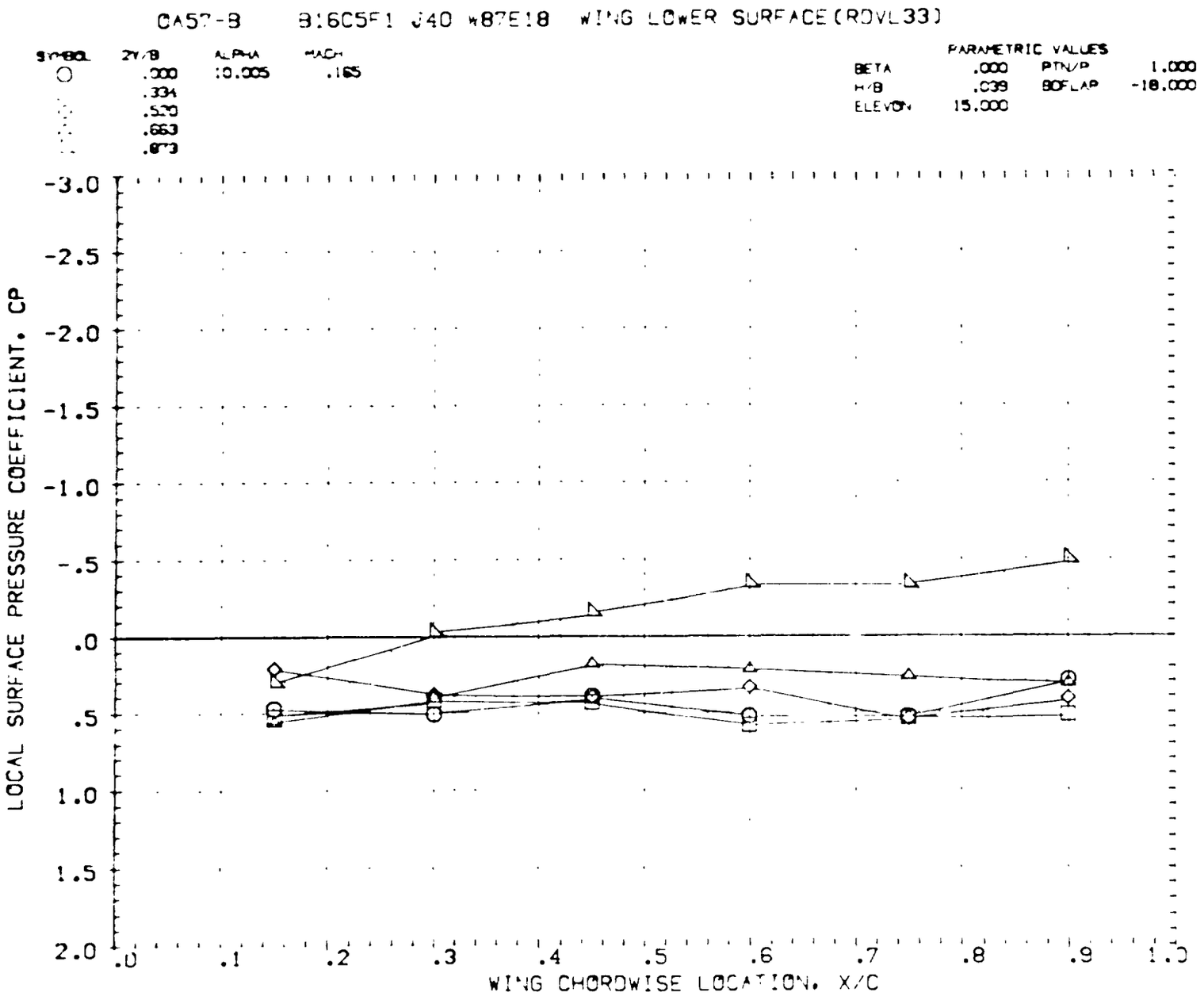


FIG 78 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVN

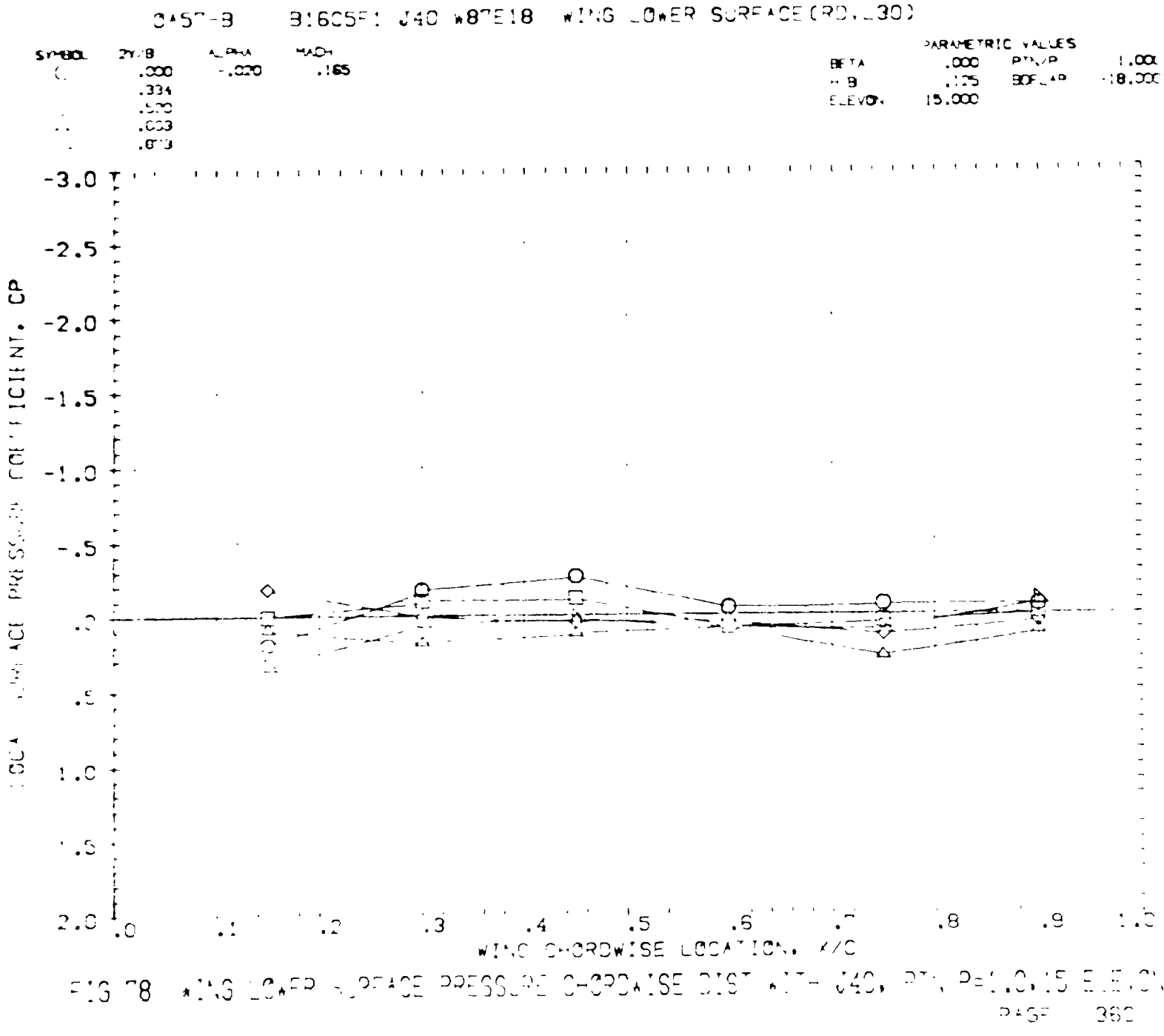


FIG 78 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTW, P=1.0,15 ELEVON

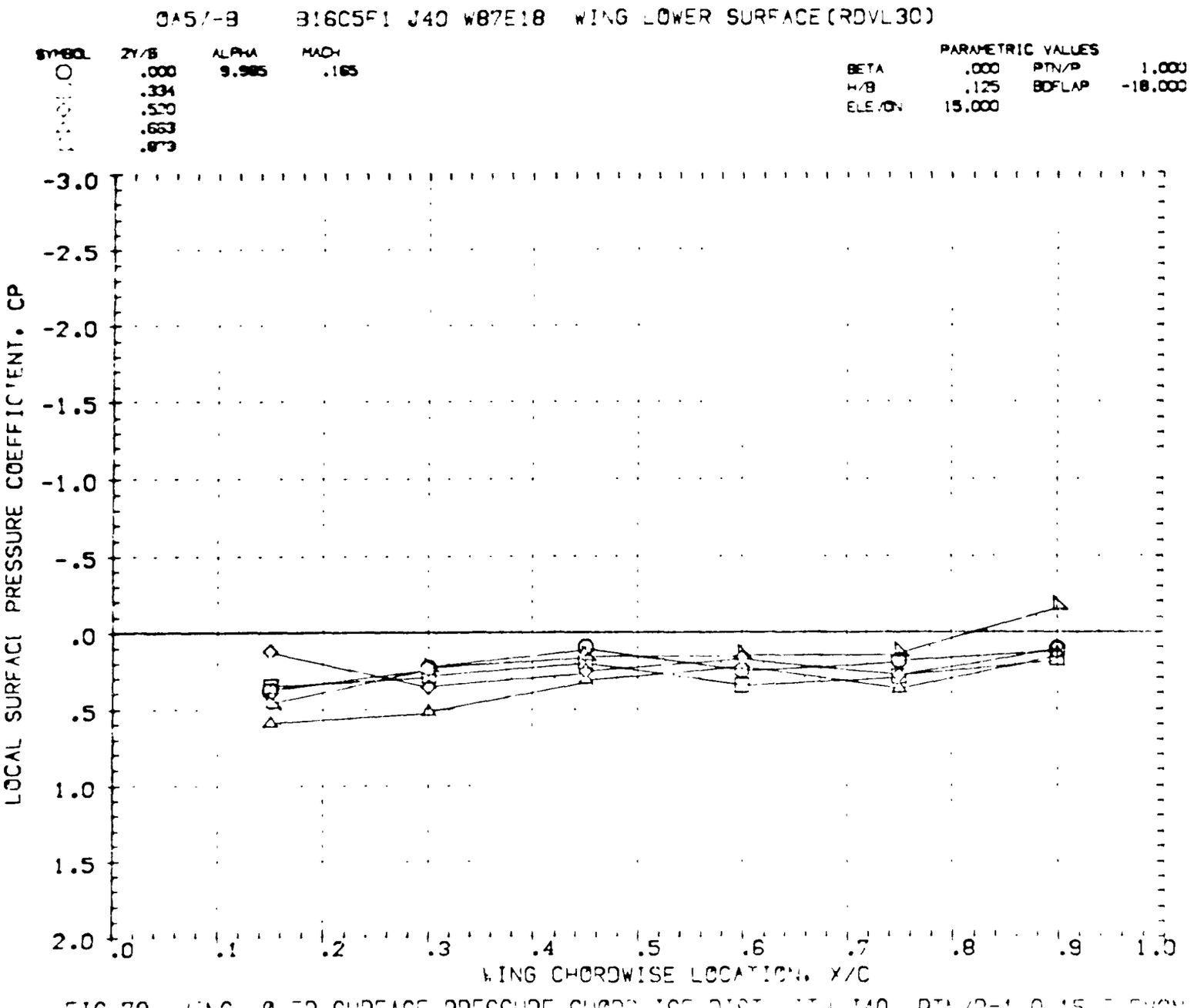


FIG 78 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 15 ELEVON

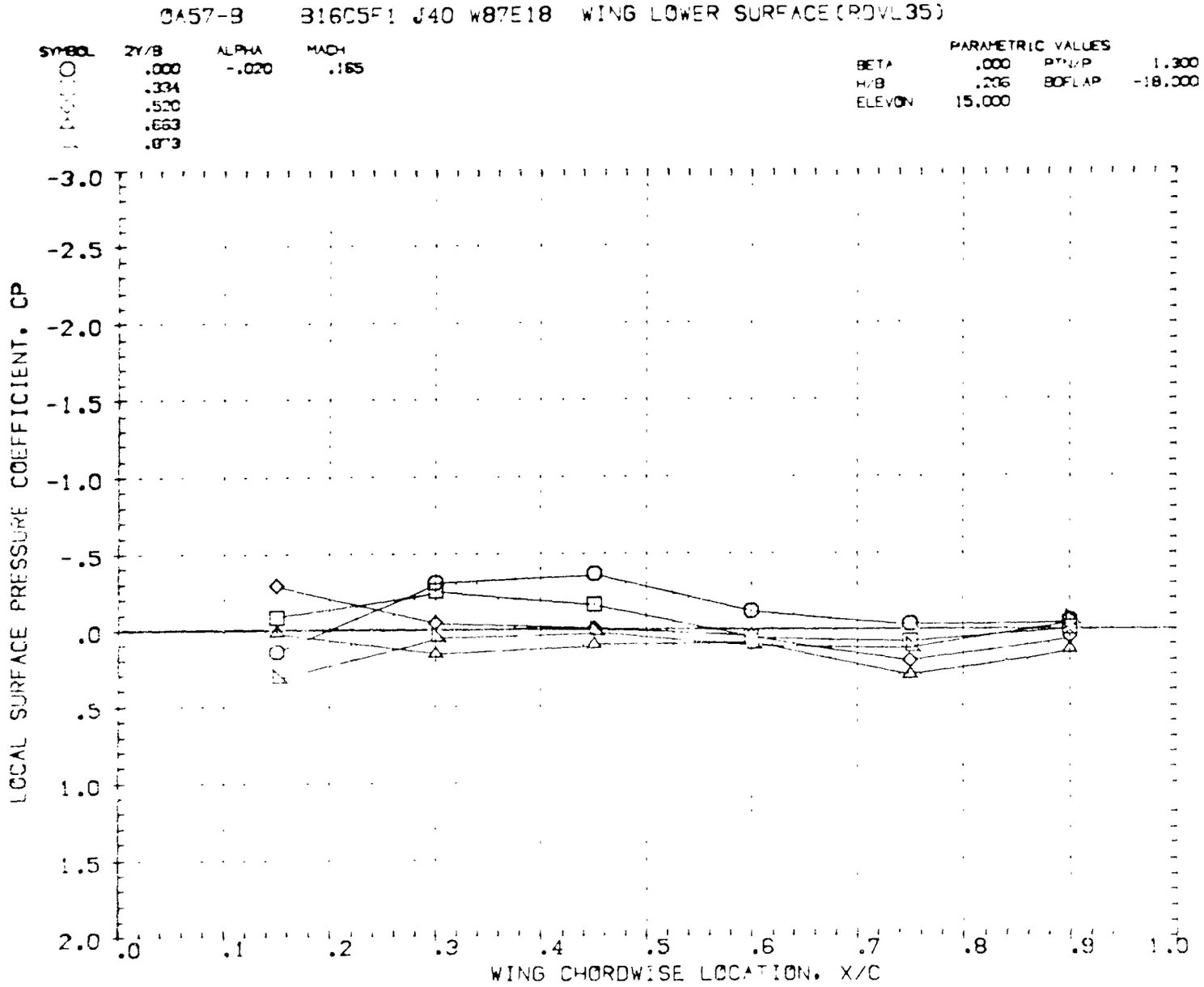


FIG 78 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVON

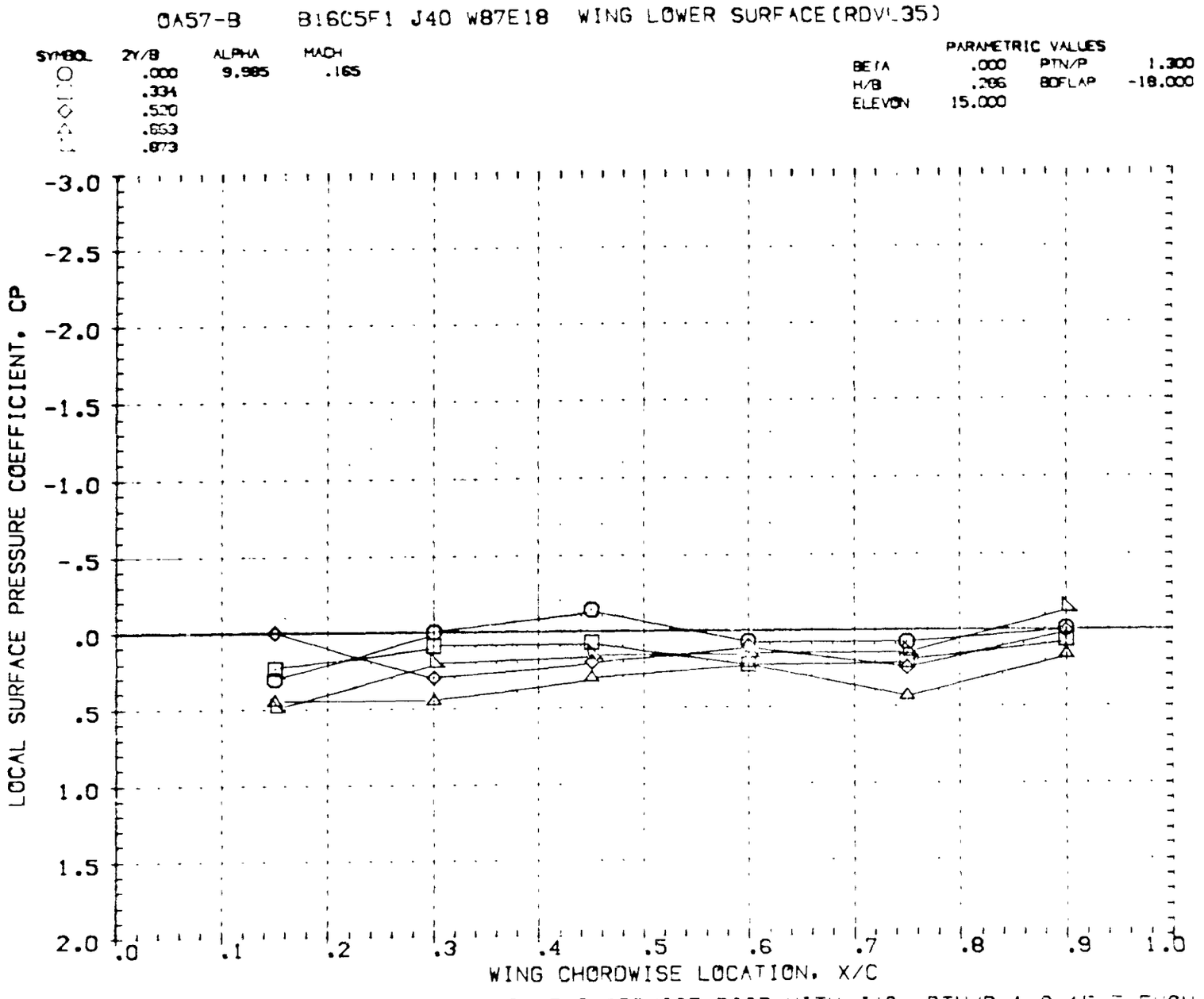


FIG 78 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0,15 ELEVON

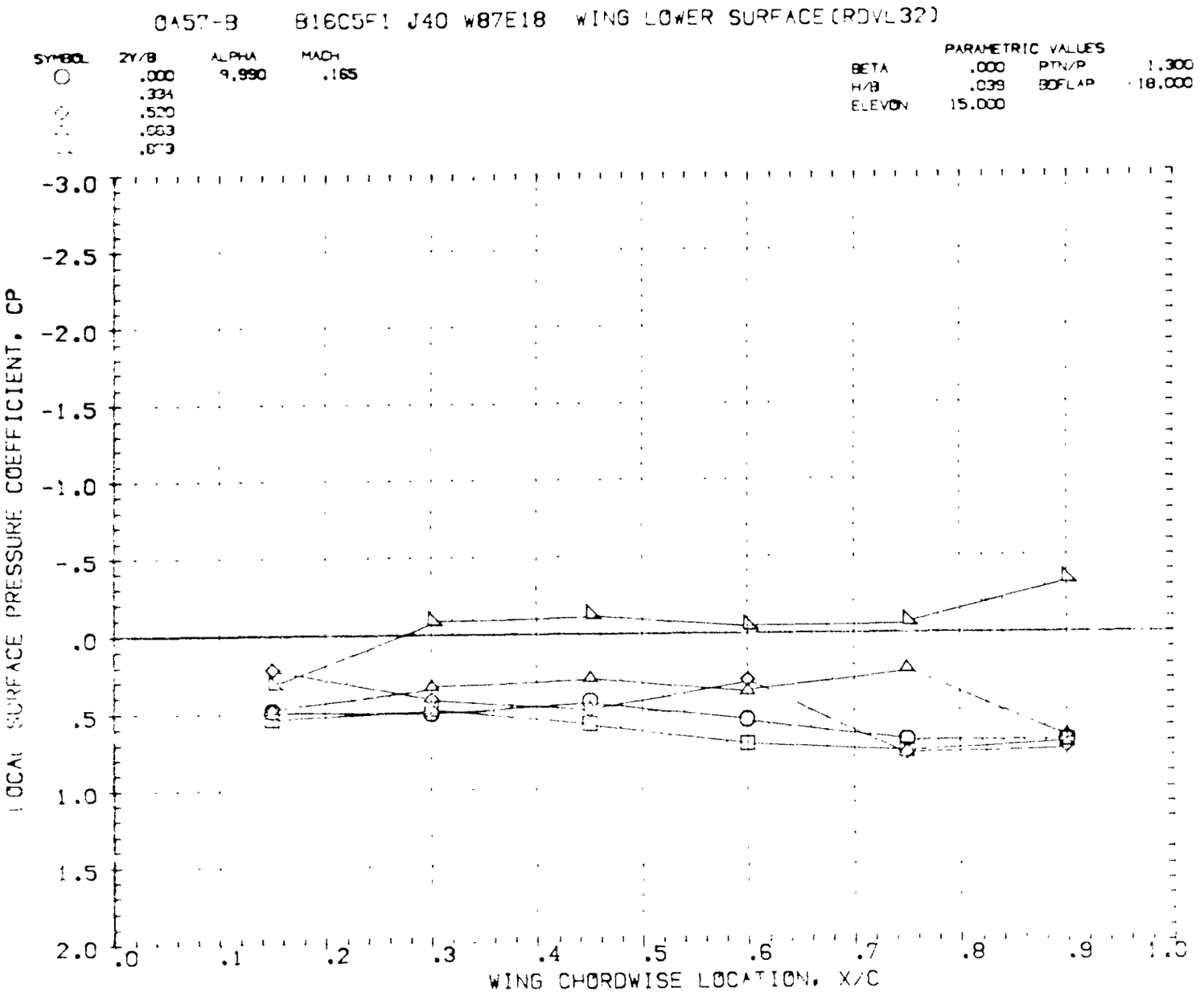


FIG 79 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

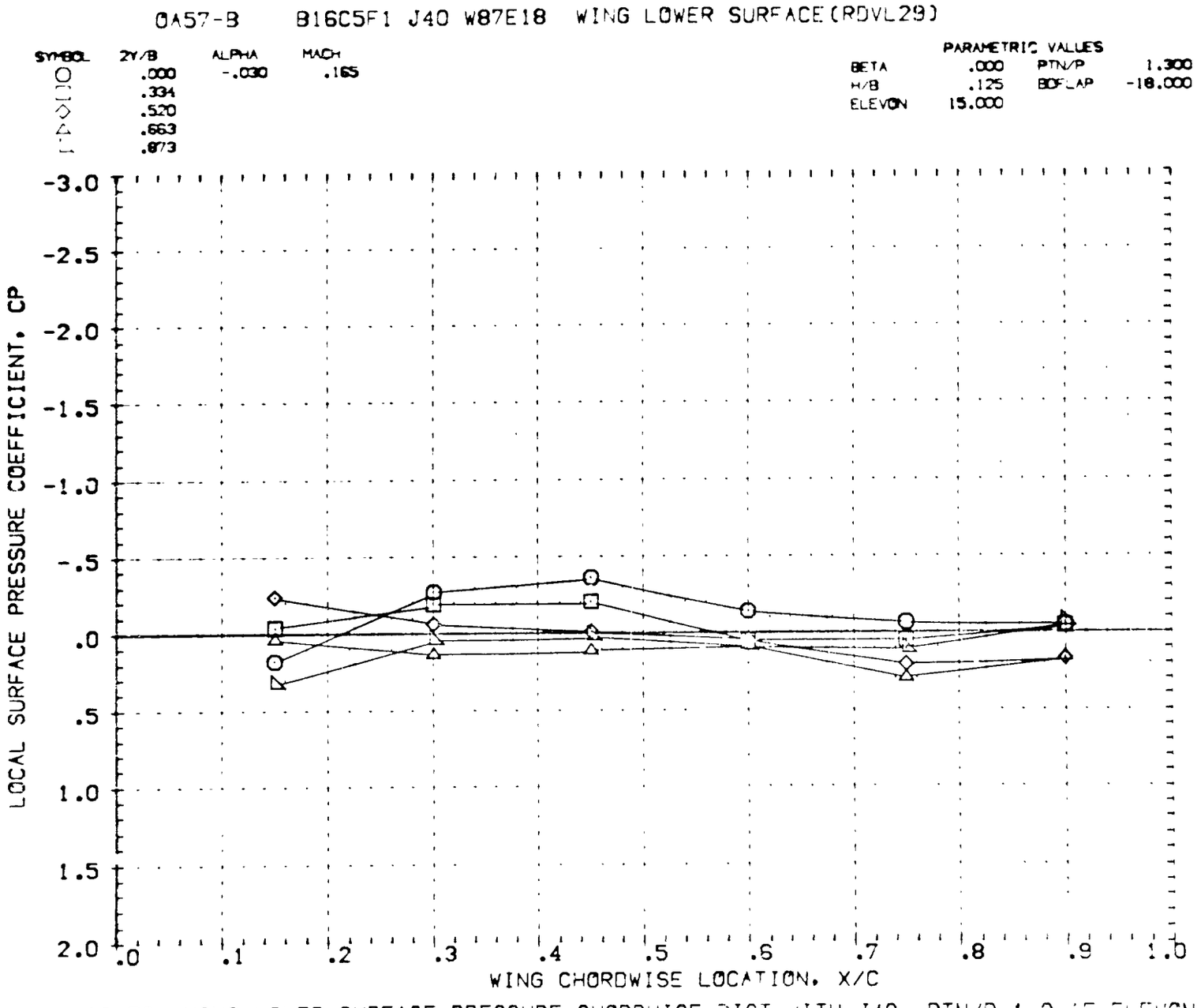


FIG 79 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 15 ELEVON

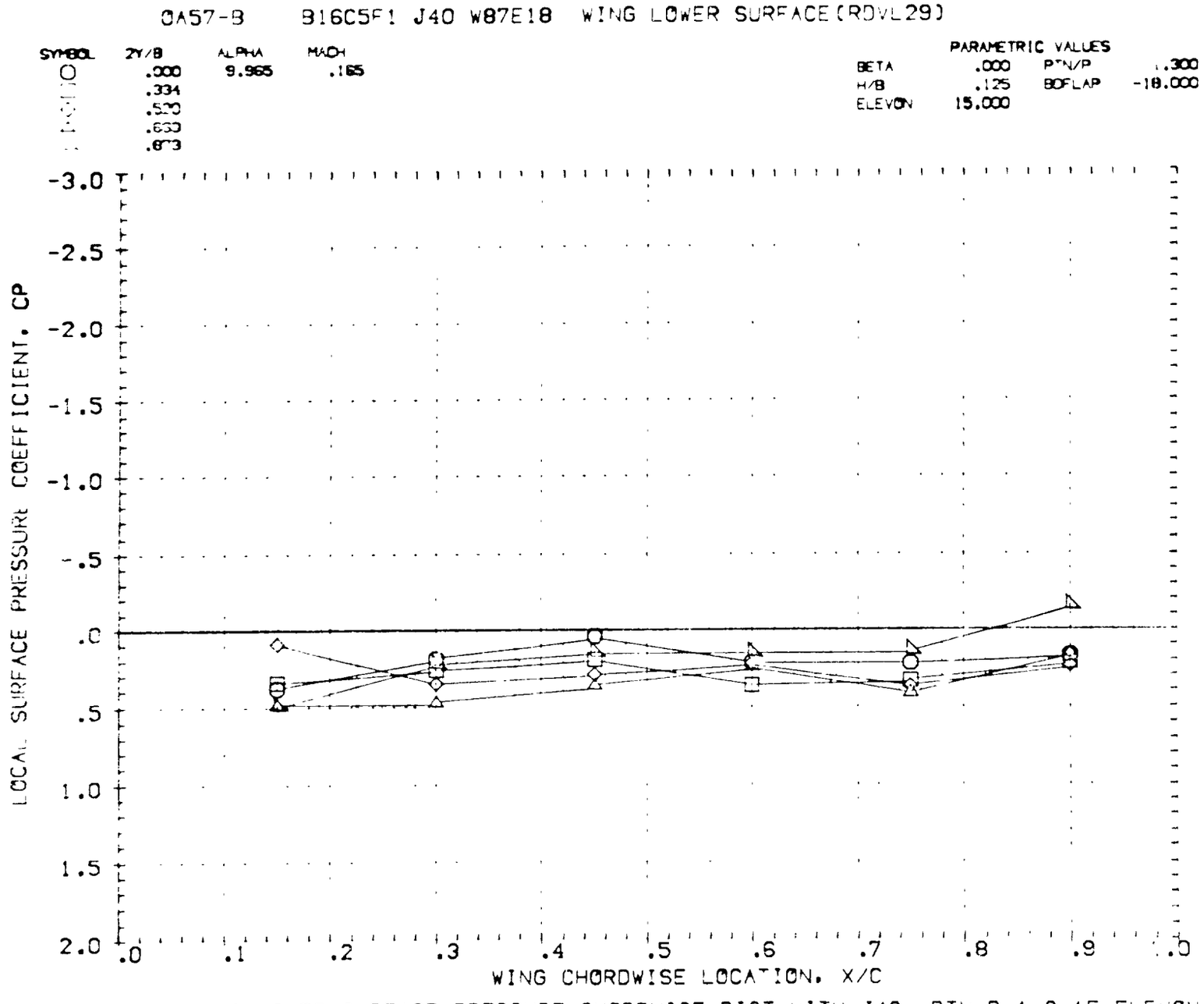


FIG 79 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 15 ELEVON

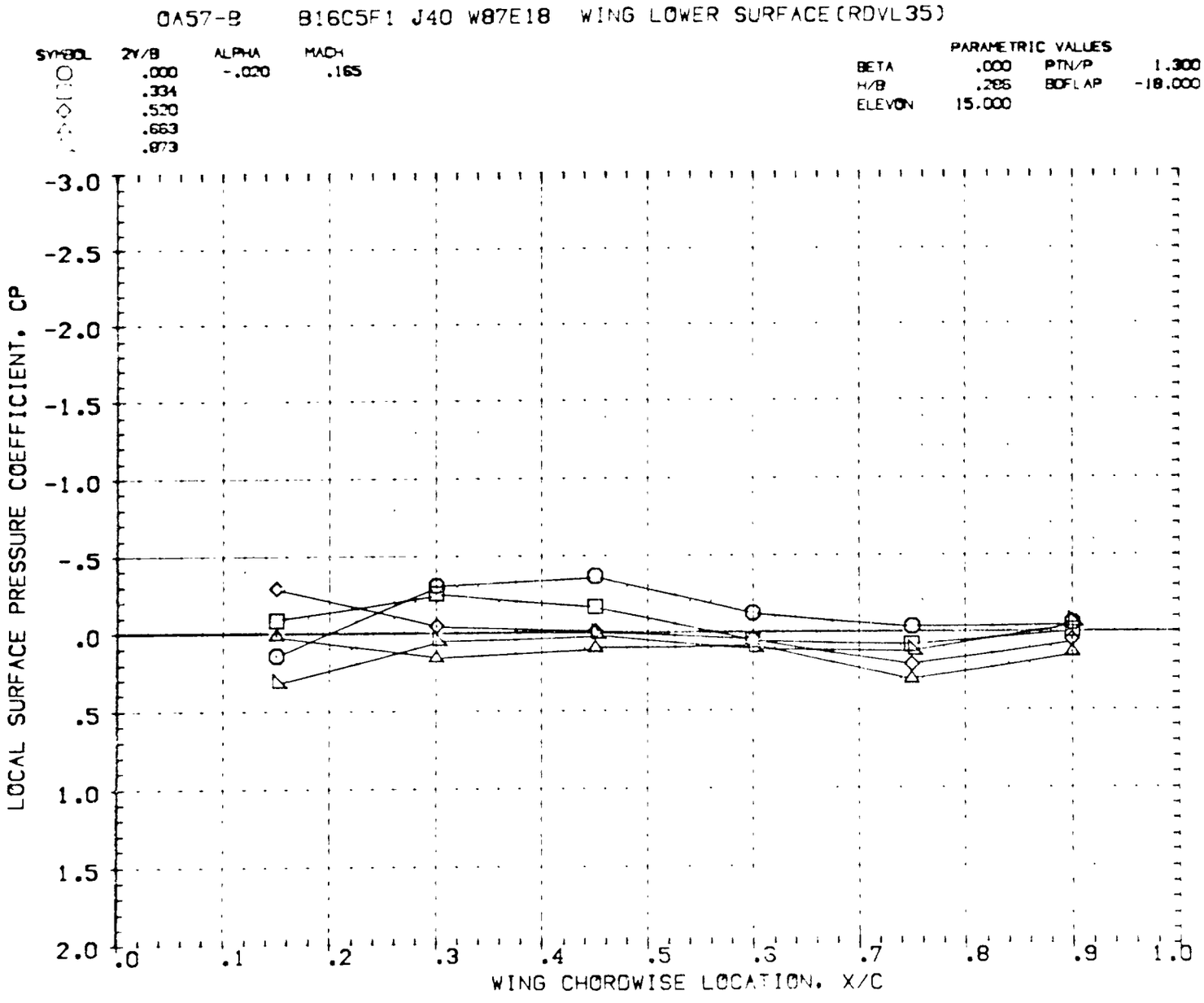


FIG 79 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

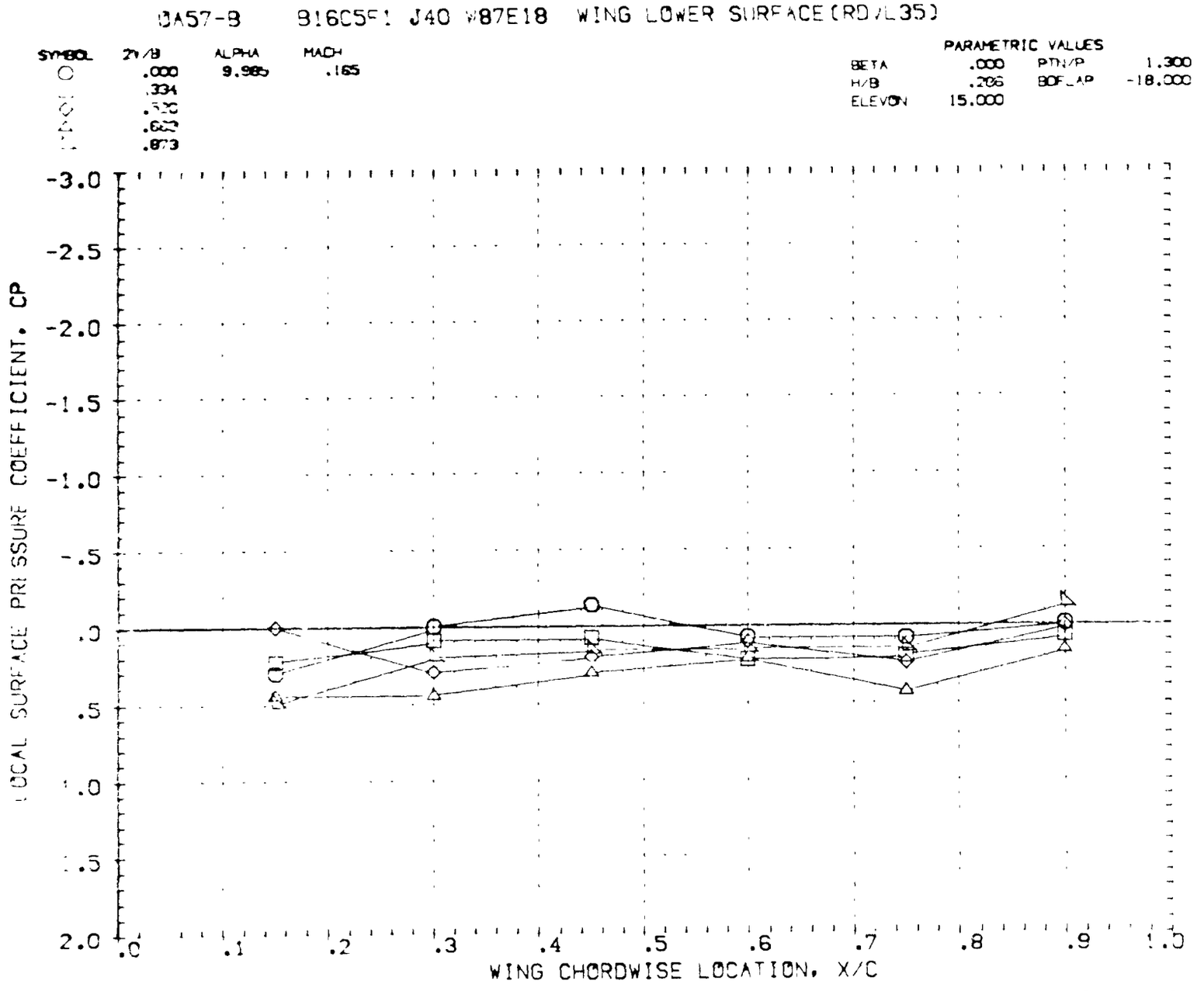


FIG 79 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 15 ELEVON

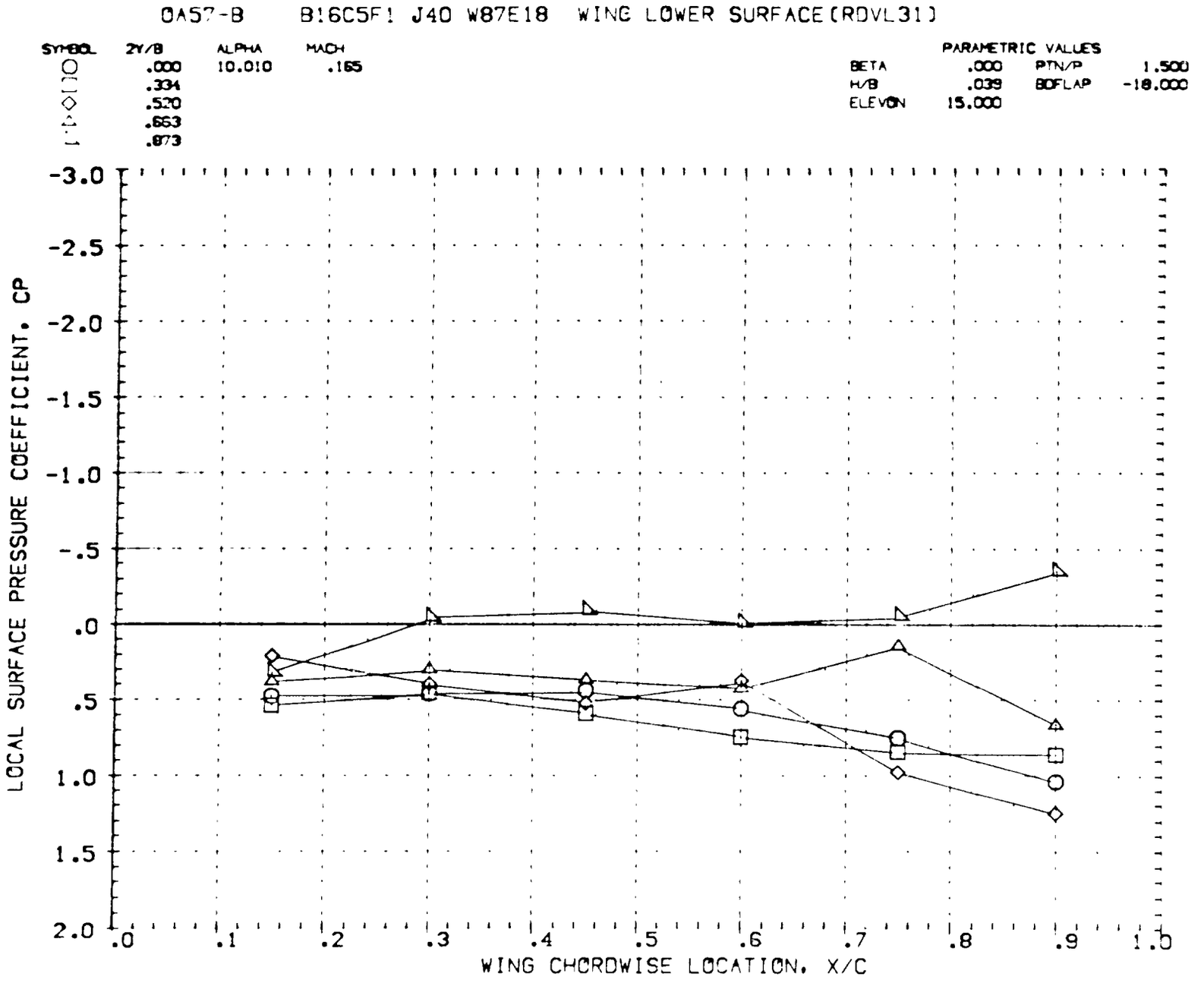


FIG 80 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

0A57-B B16C5F1 J40 W87E18 WING LOWER SURFACE(RD: 78)

SYMBOL	2Y/B	ALPHA	MACH
○	.000	-.020	.165
	.334		
	.520		
	.663		
	.813		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H B	.125	BOFLAP	-18.000
ELEVON	15.000		

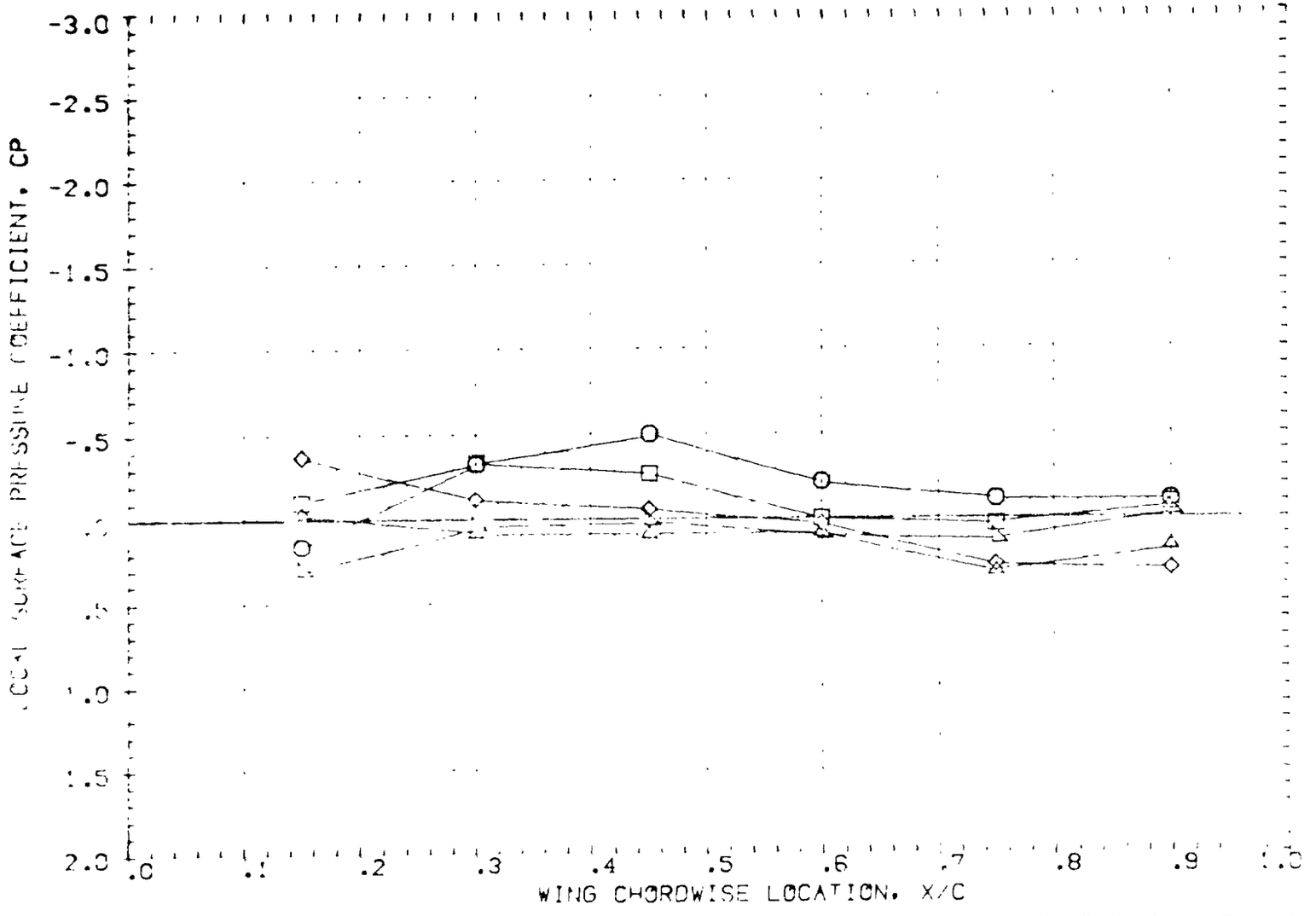


FIG 80 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN P=1.5,15 ELEVON

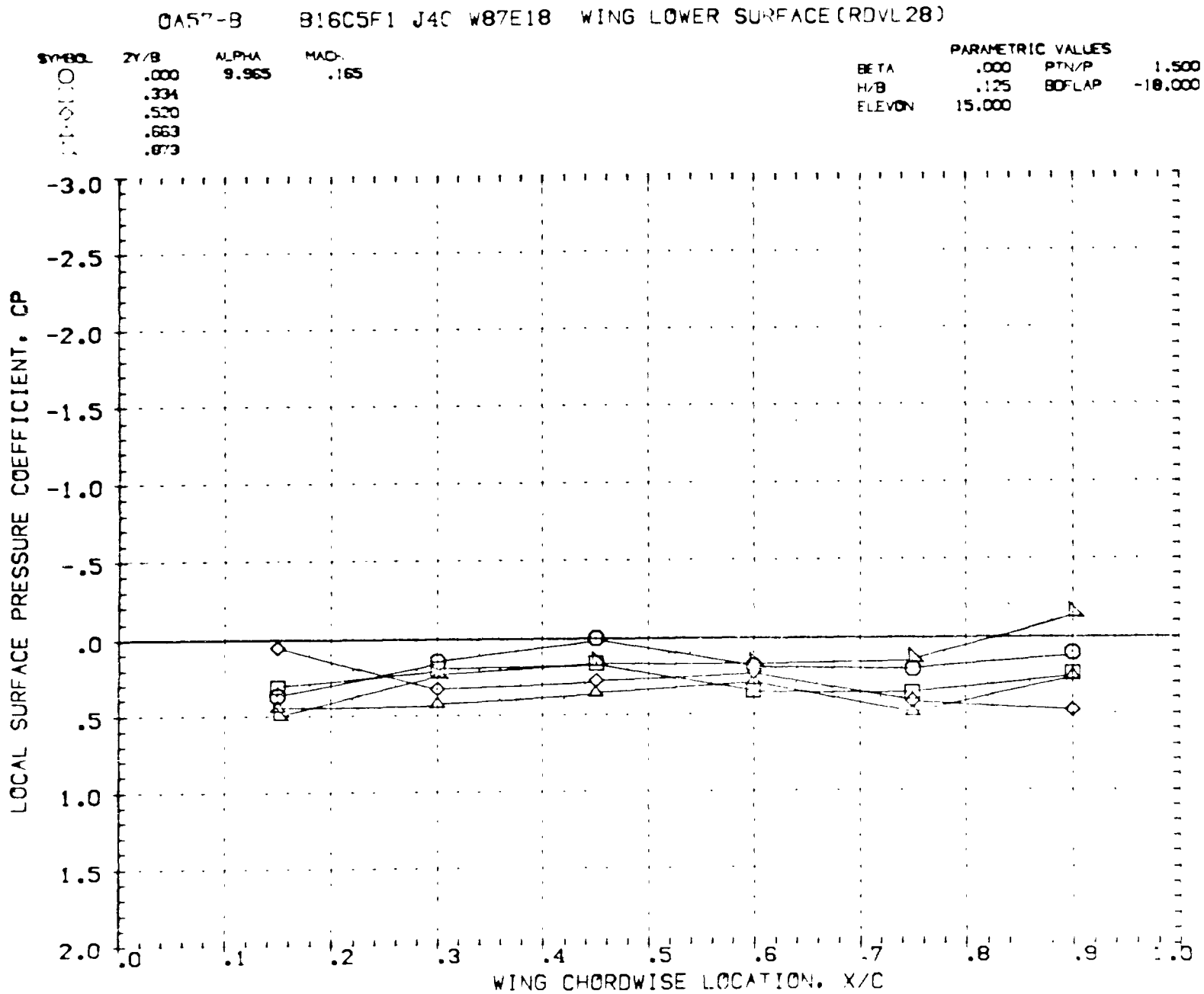


FIG 80 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

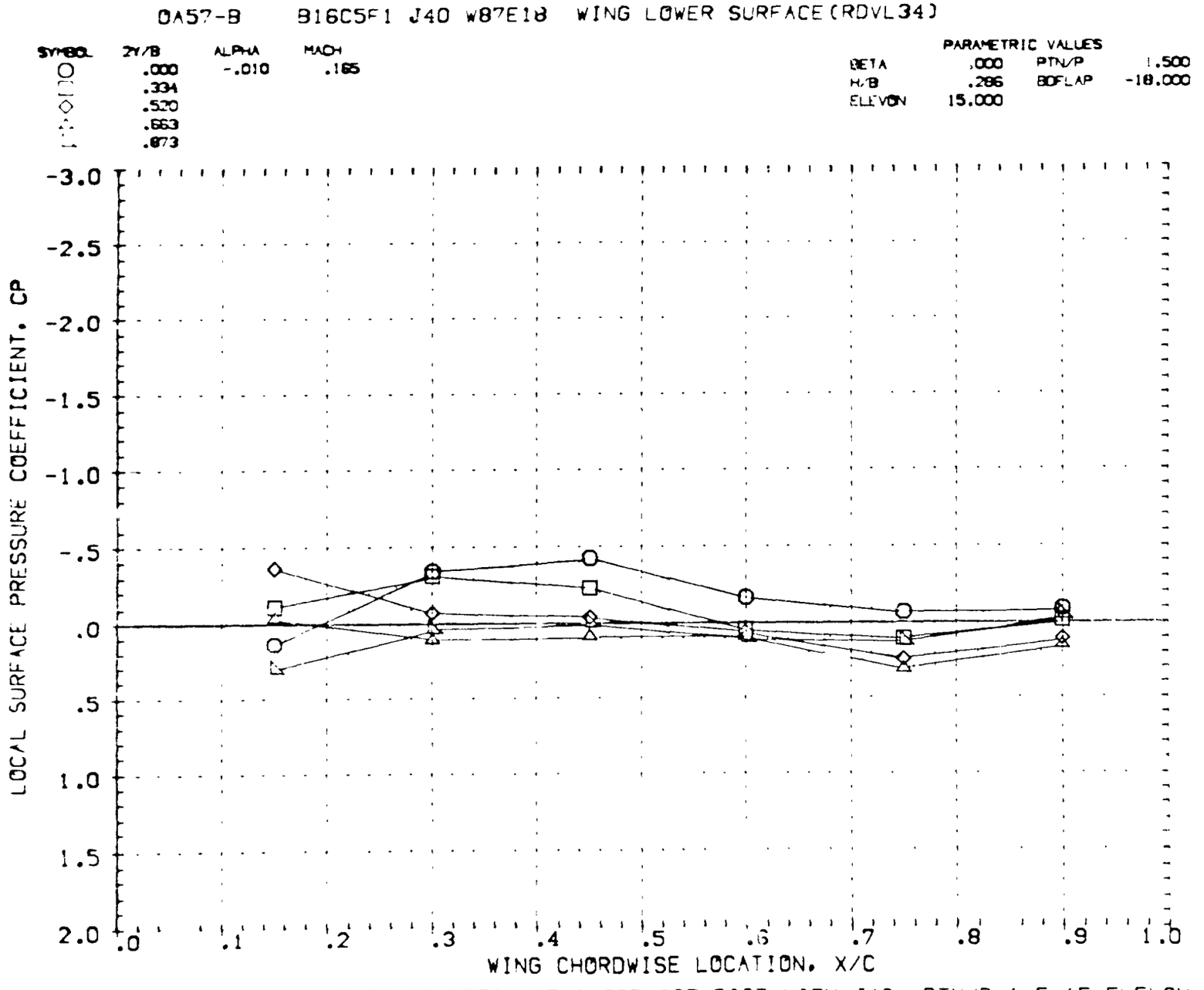


FIG 80 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

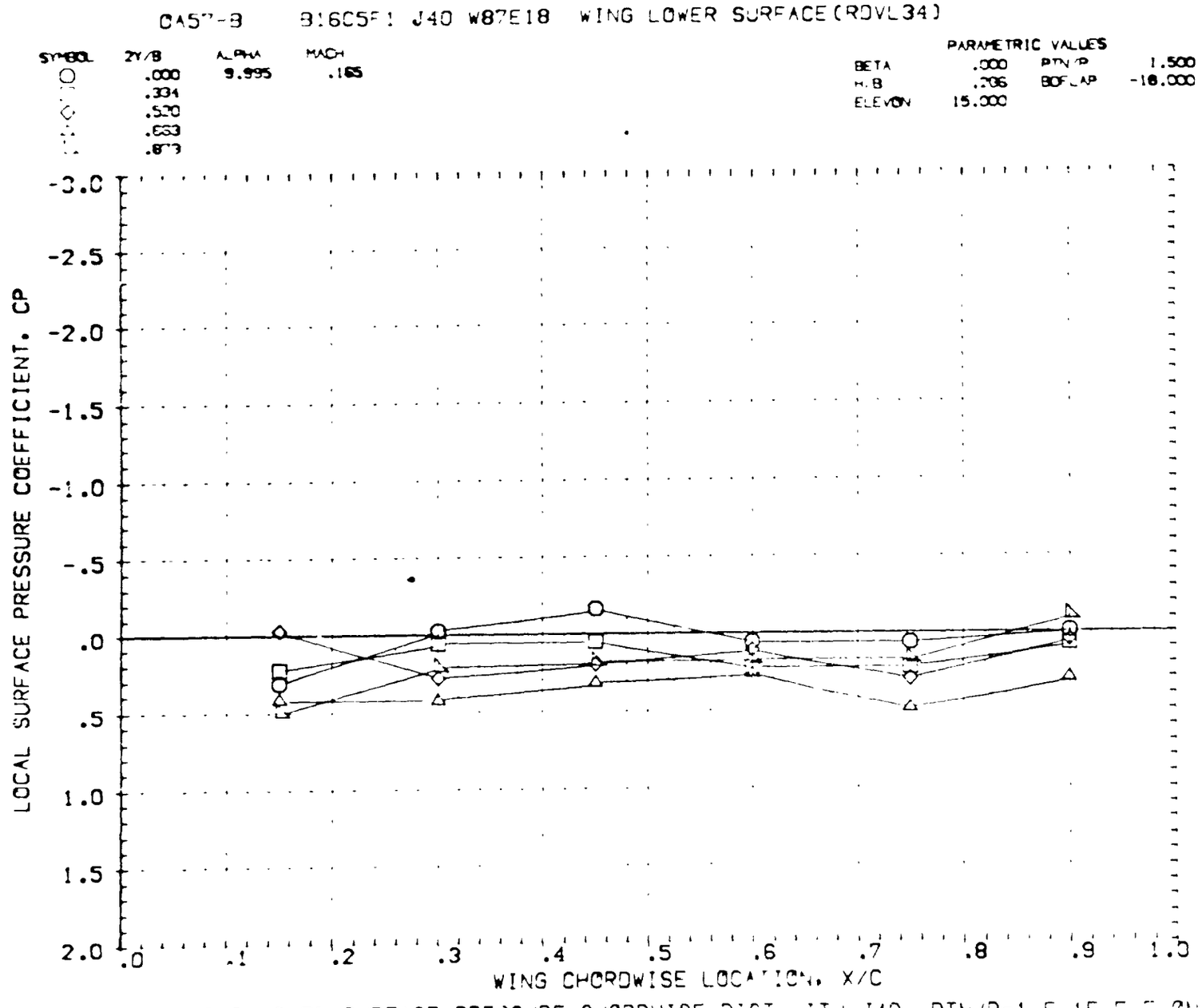


FIG 80 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

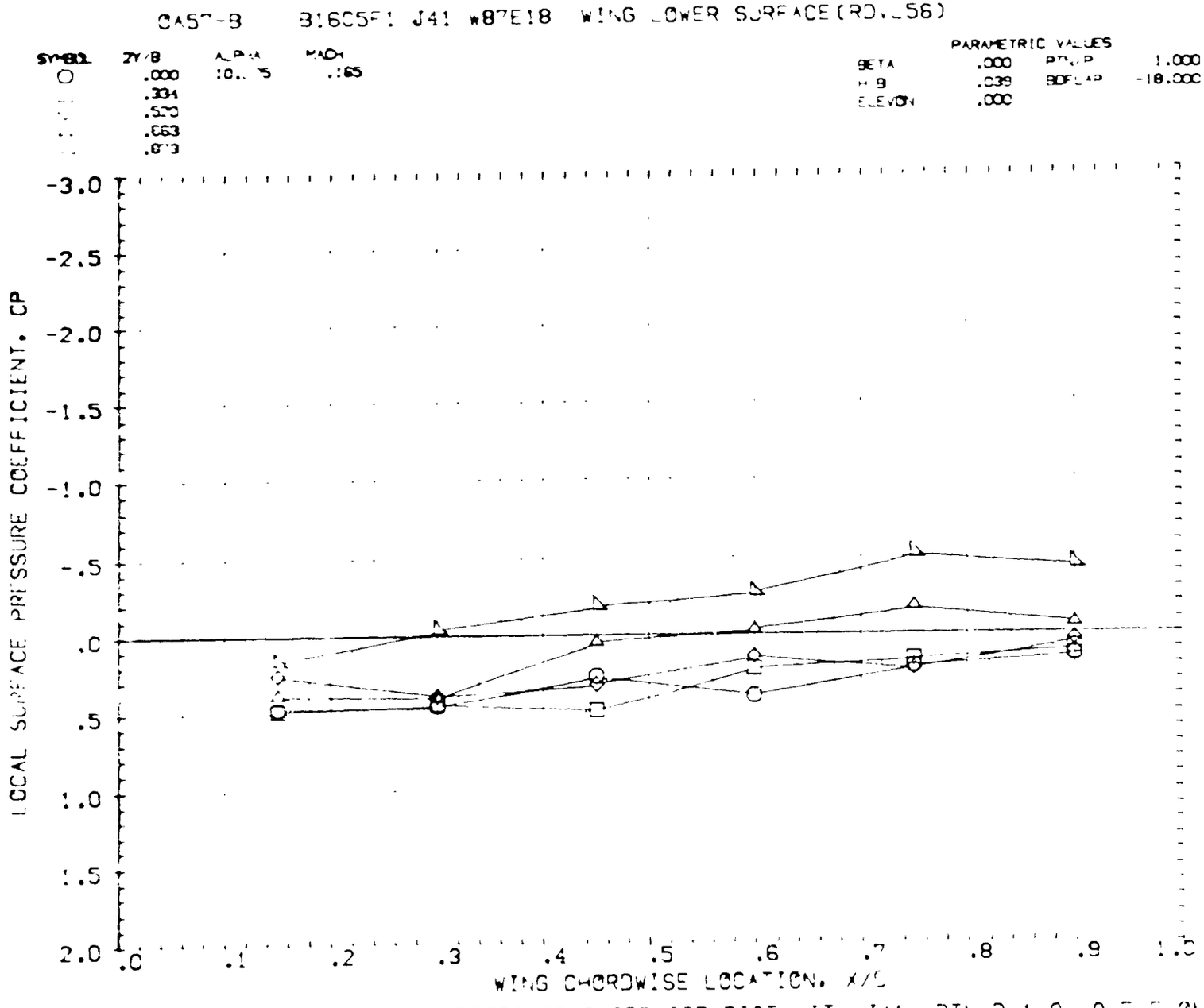


FIG 81 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN P=1.0, 0 ELEVON

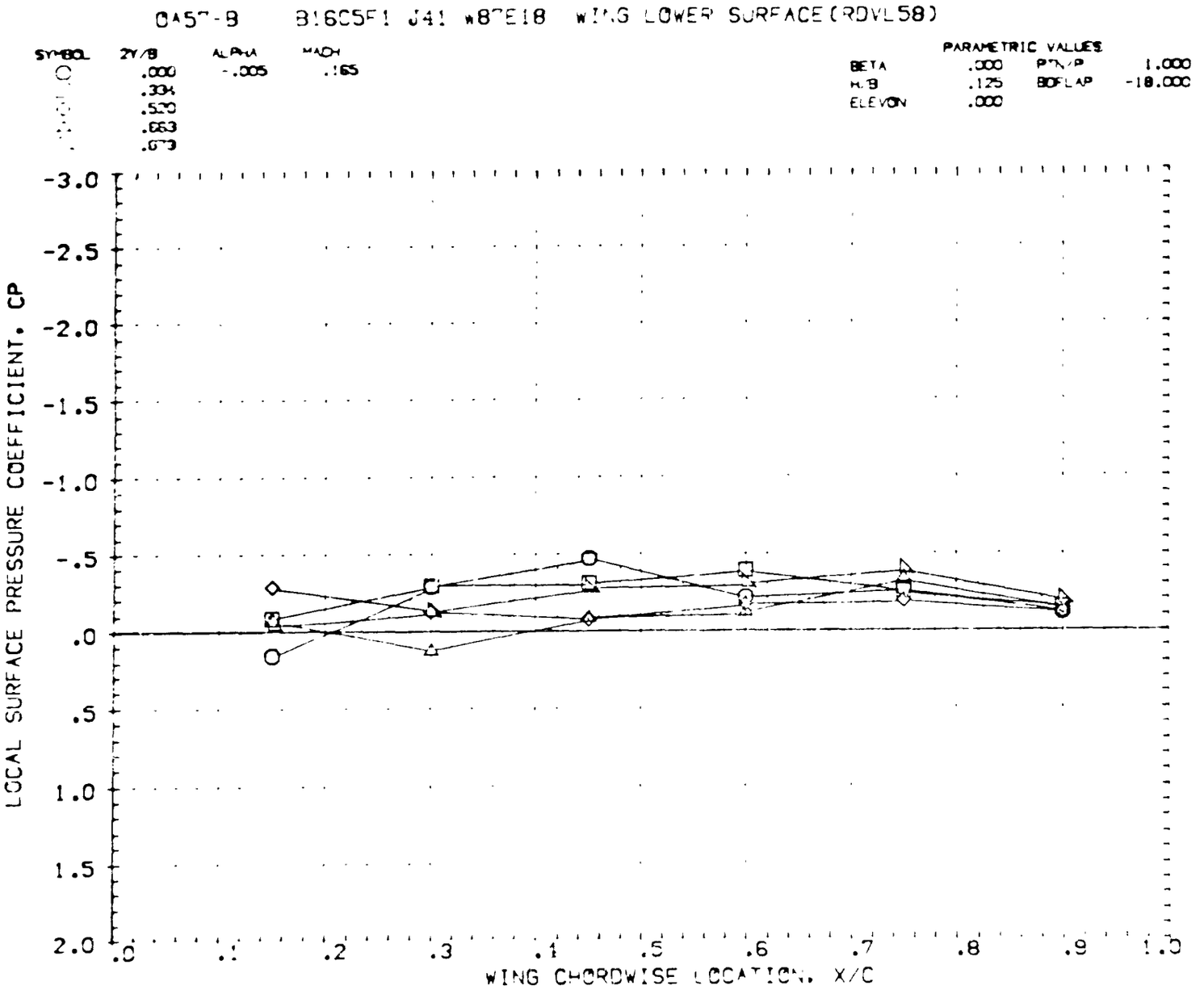


FIG 81 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

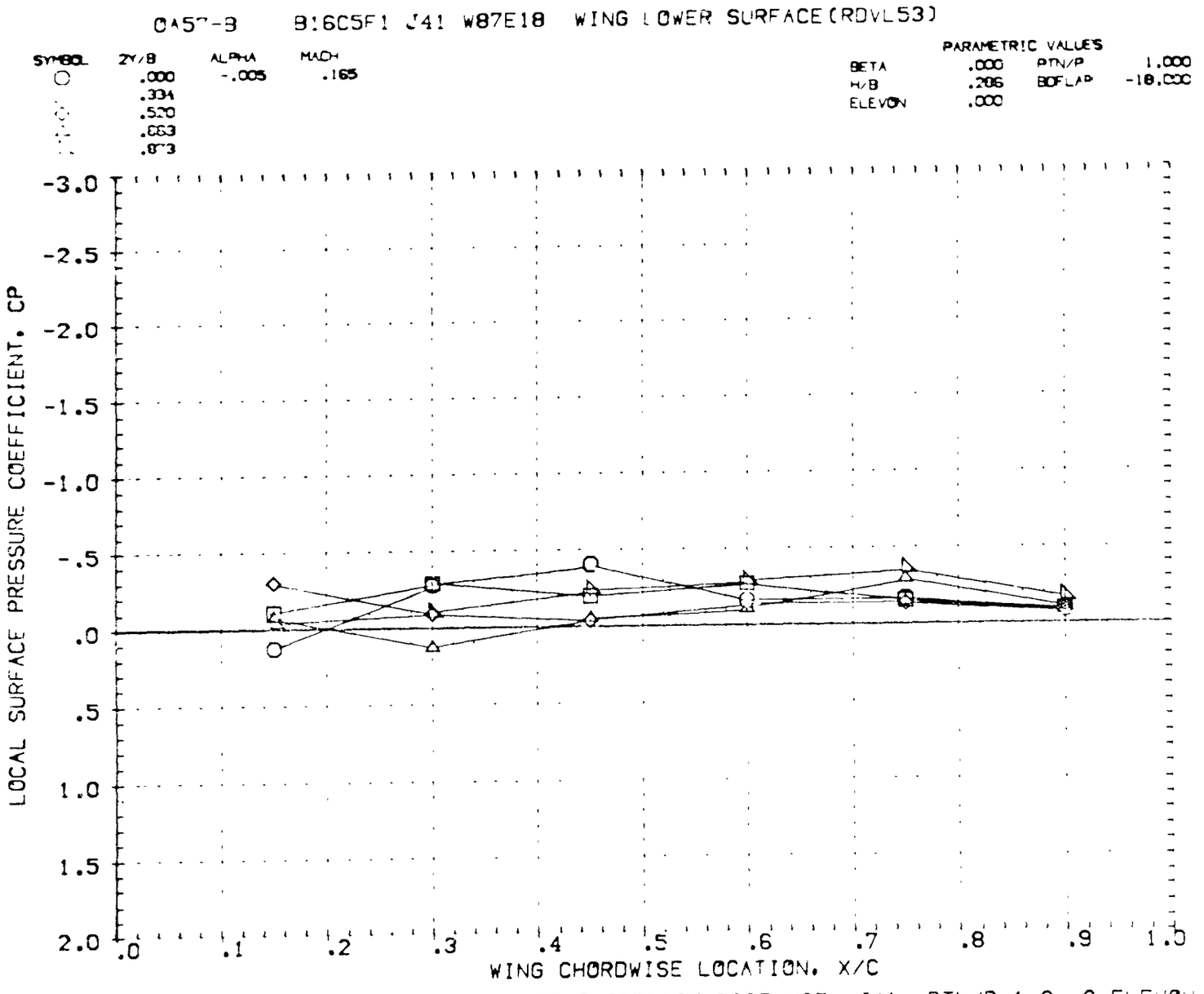


FIG 81 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

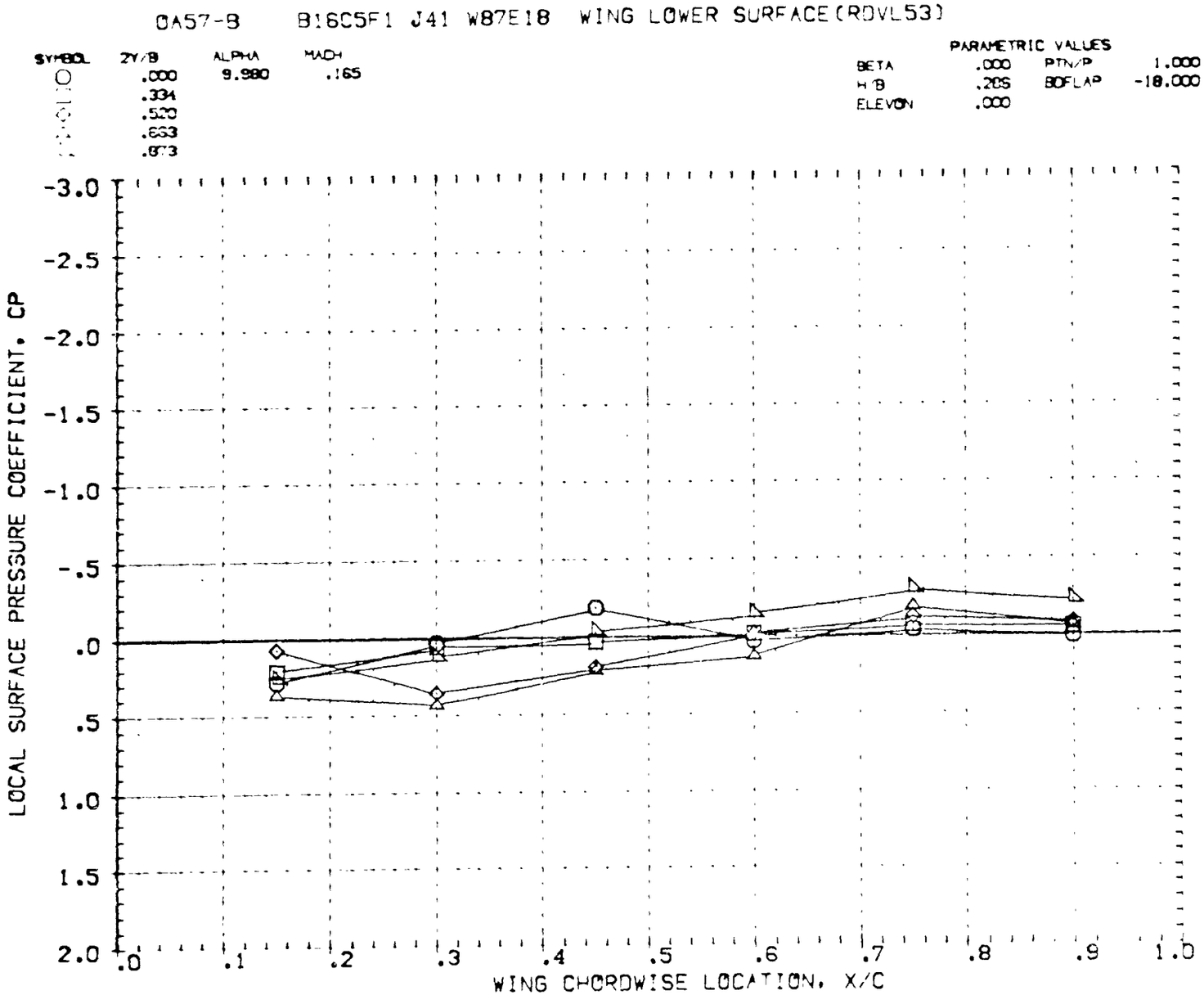


FIG 81 WING LOWER SURFACE PRESSURE CHORDWISE DIST [illegible] J41, PTN/P=1.0, 0 ELEVON

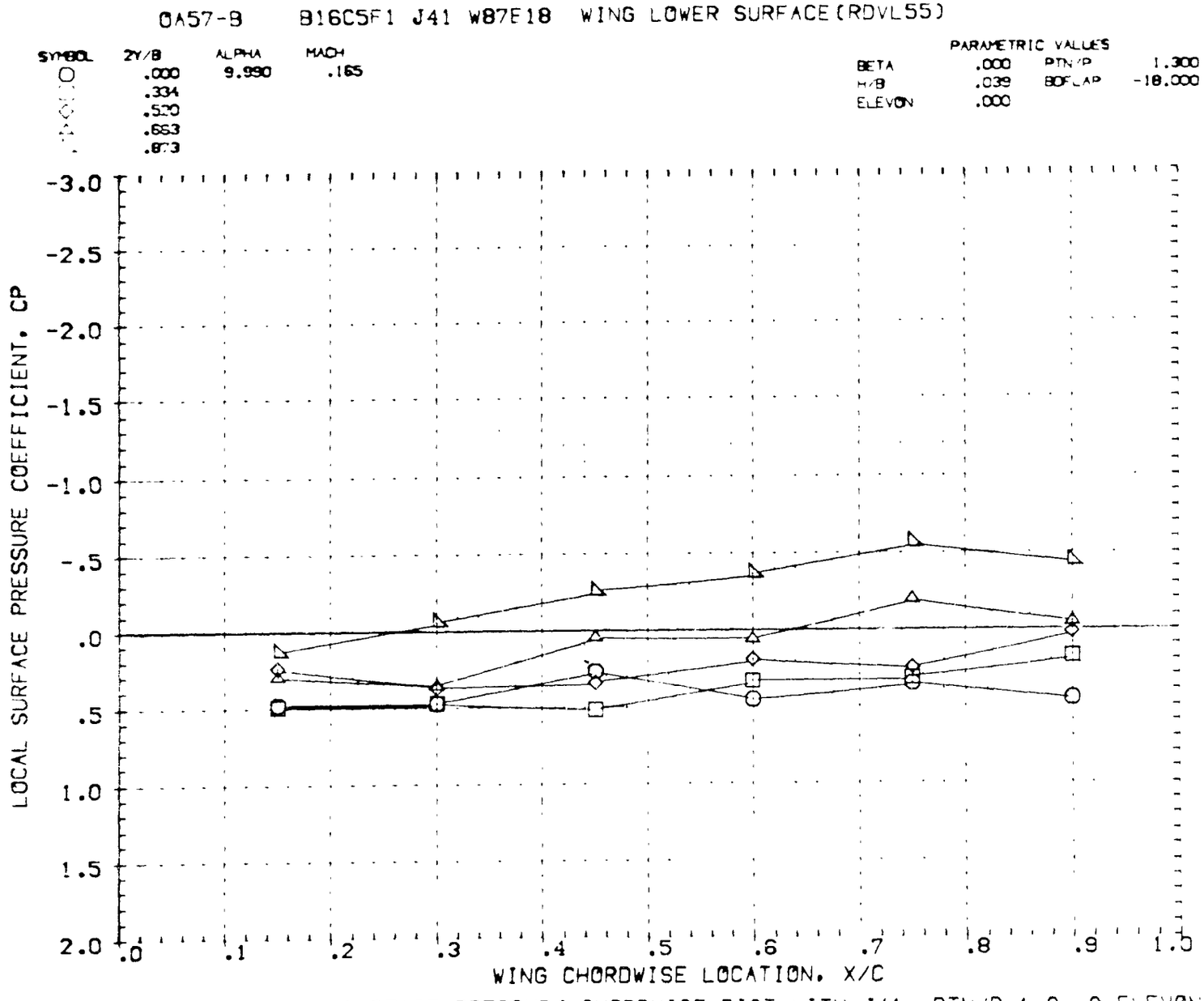


FIG 82 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

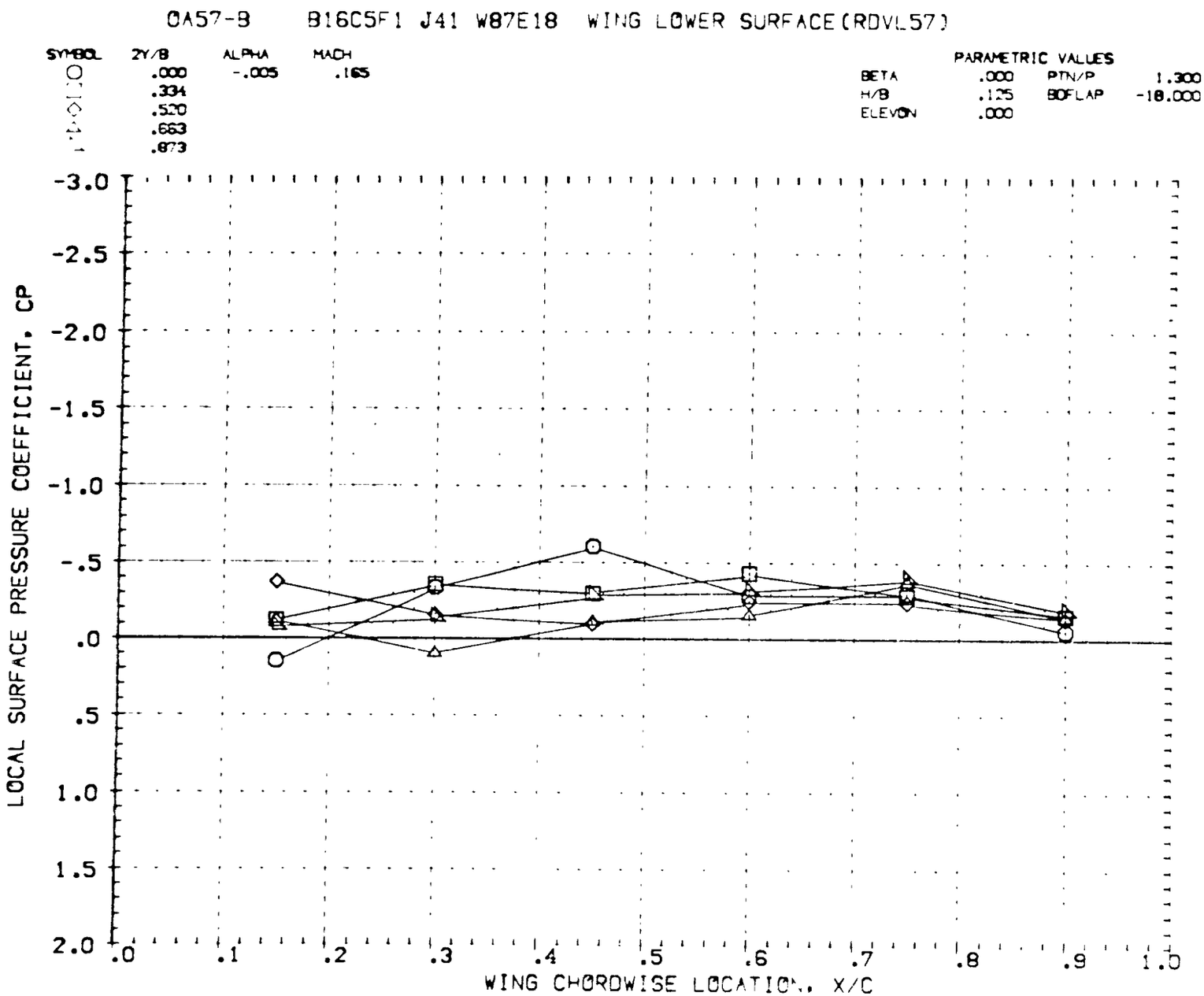


FIG 82 WING LOWER SURFACE PRESSURE C-ORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

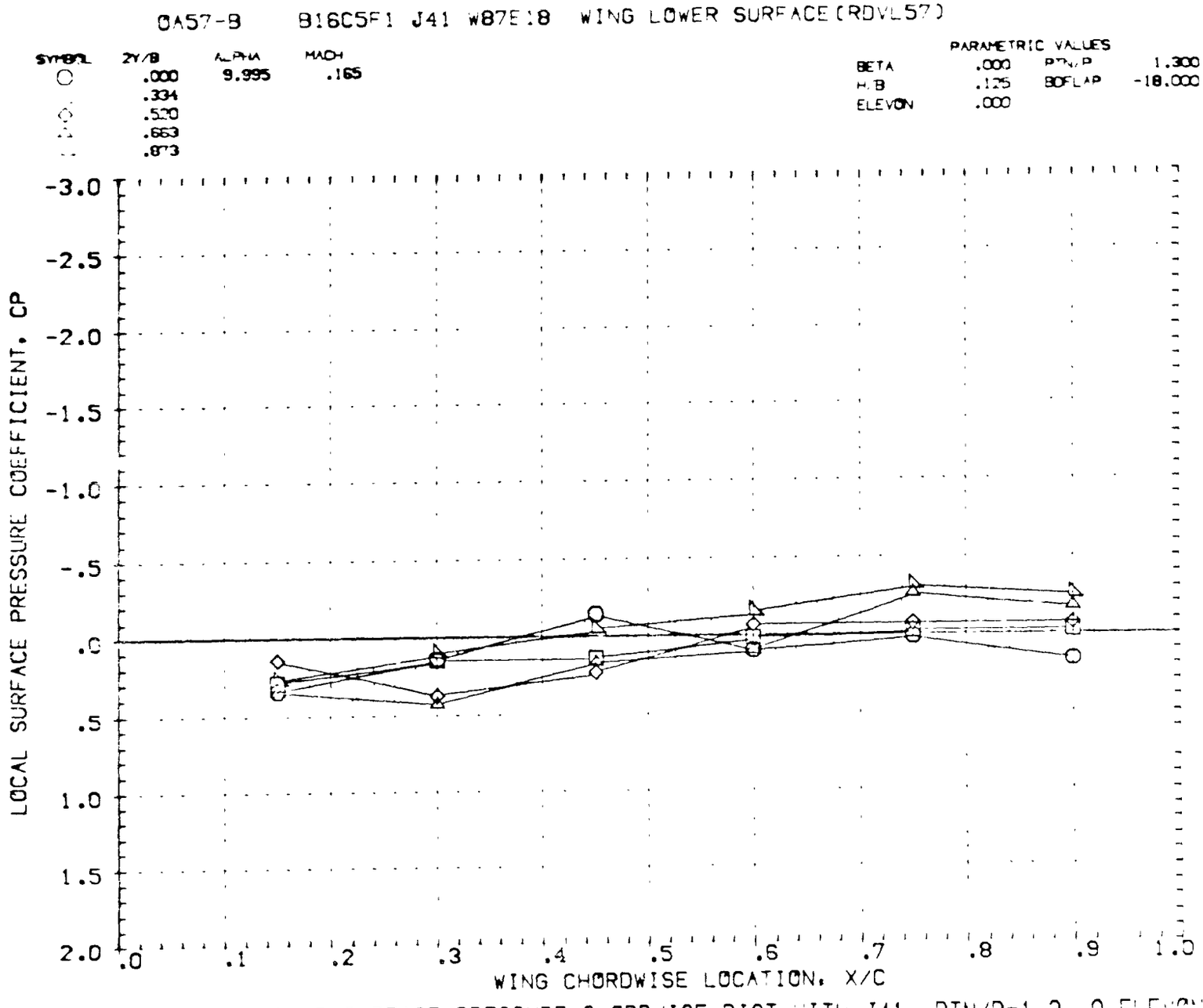


FIG 82 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

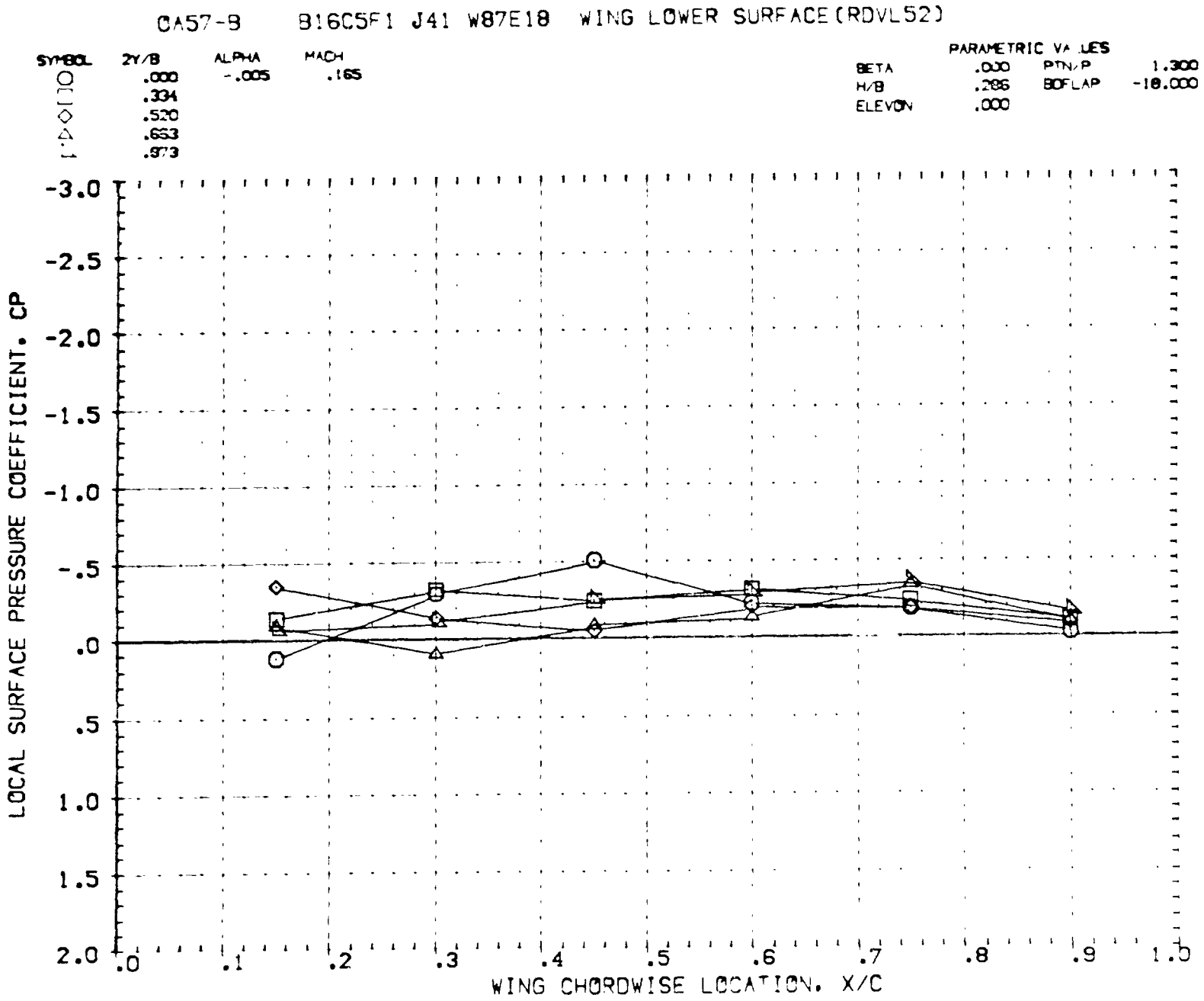


FIG 82 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELE/C.

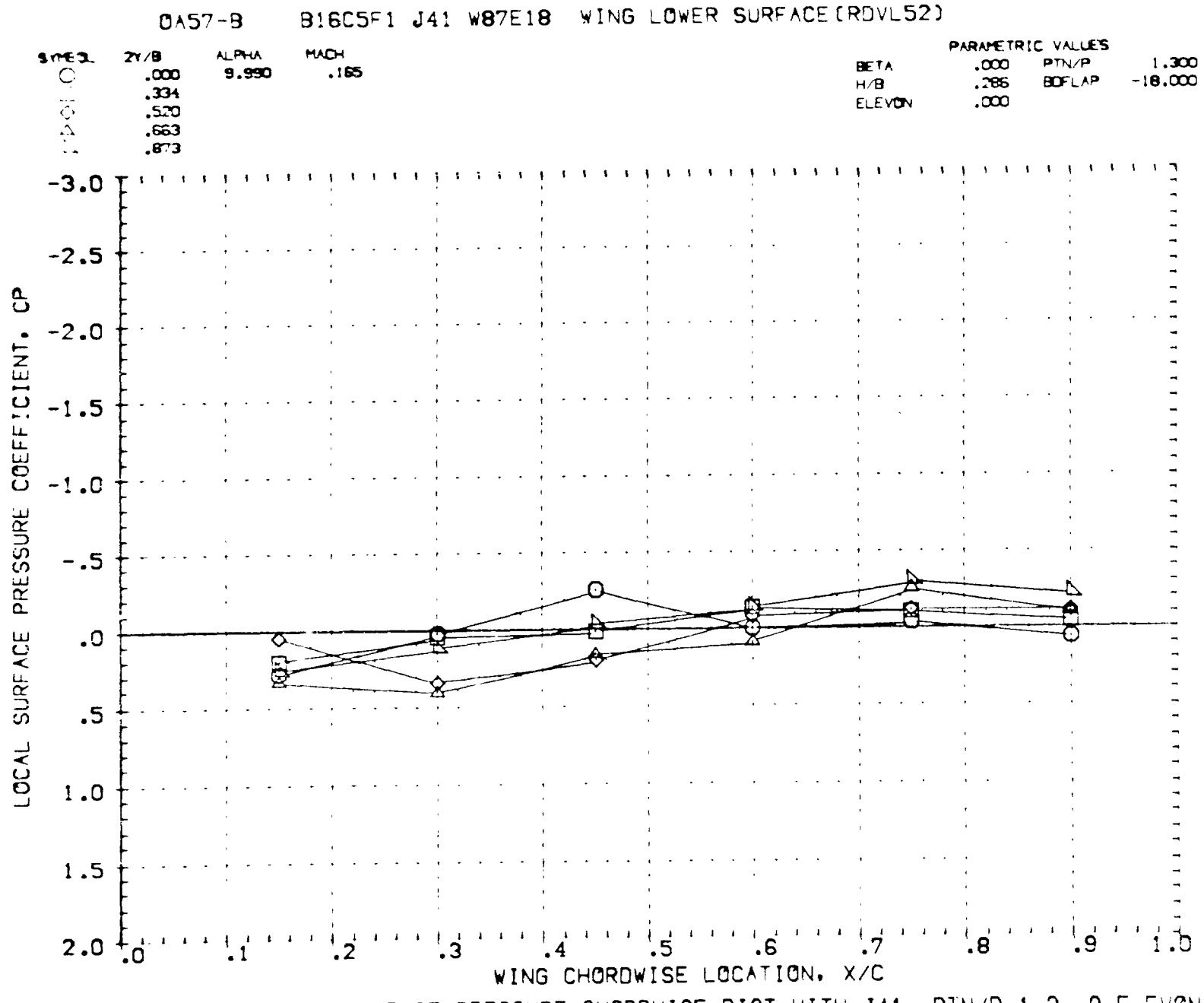


FIG 82 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

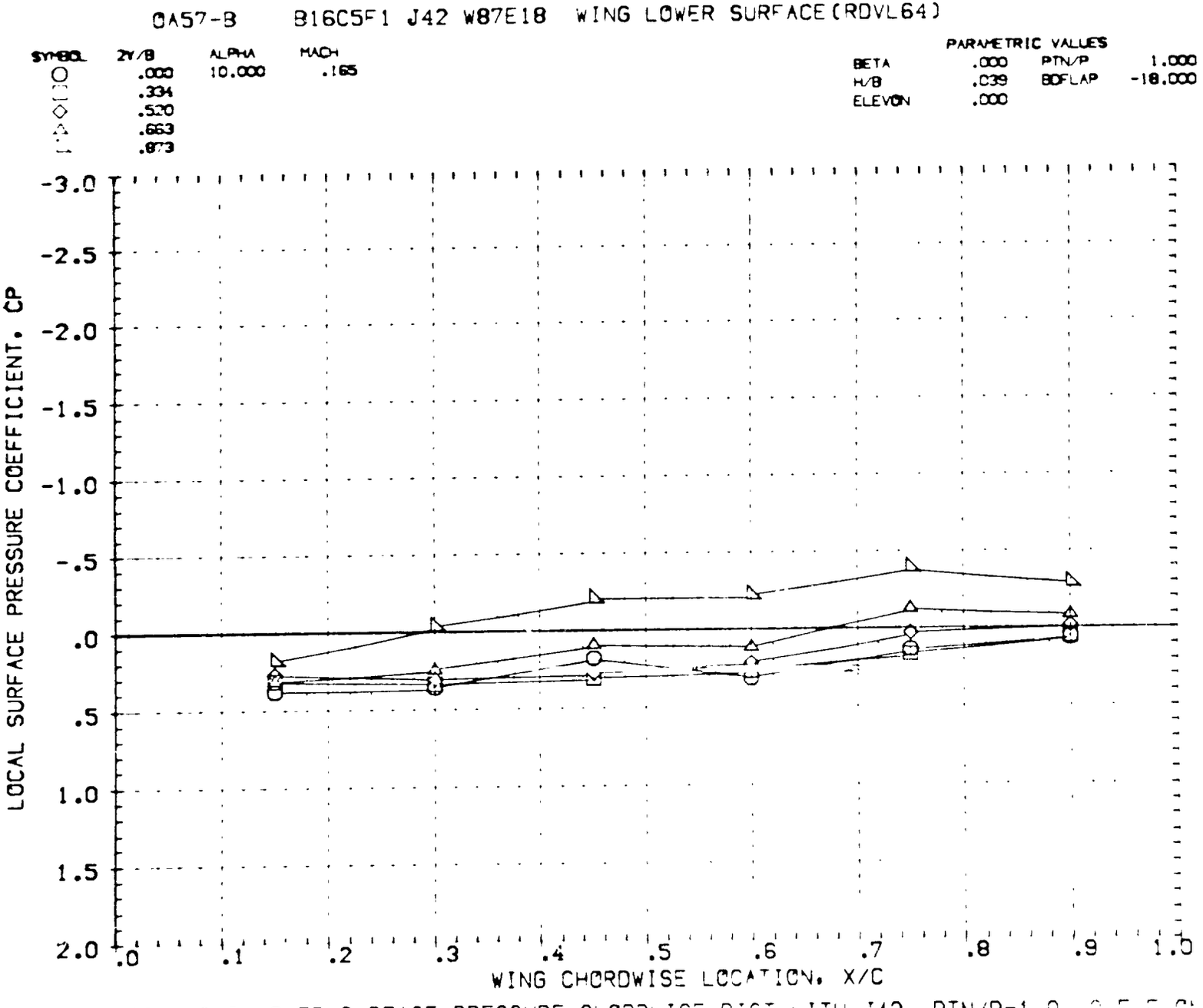


FIG 83 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

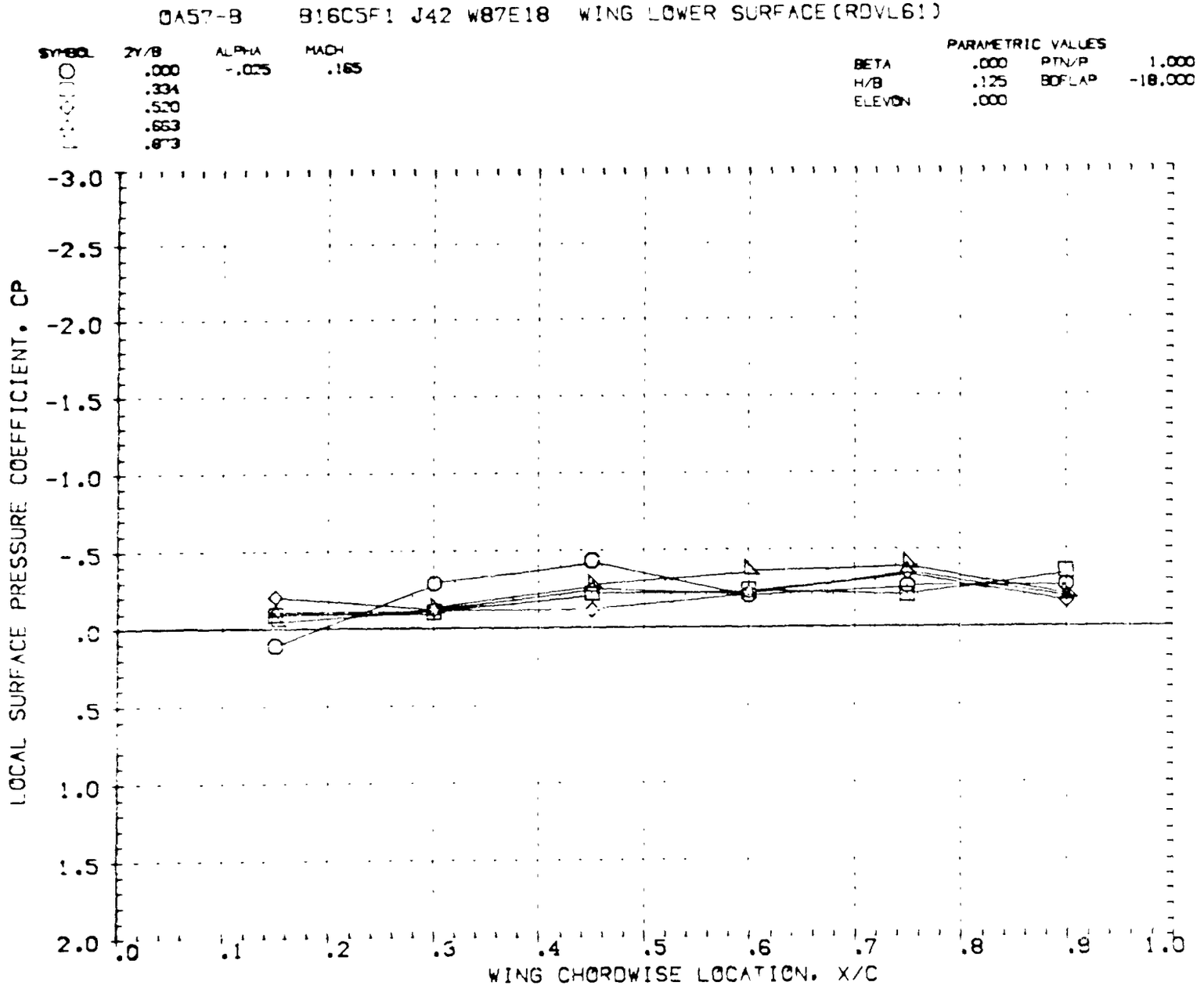


FIG 83 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

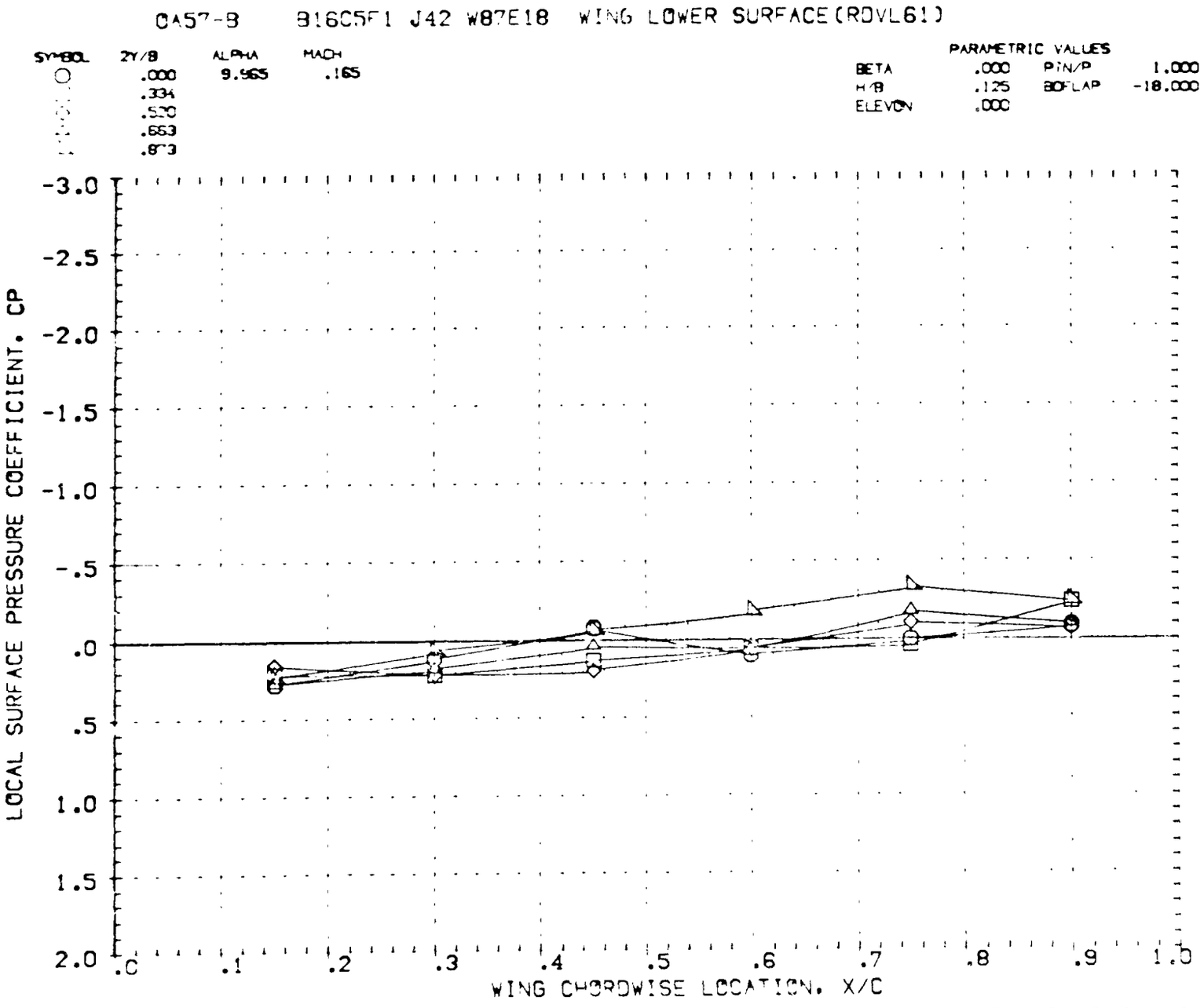


FIG 83 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, P1N/P=1.0, 0 ELEVON

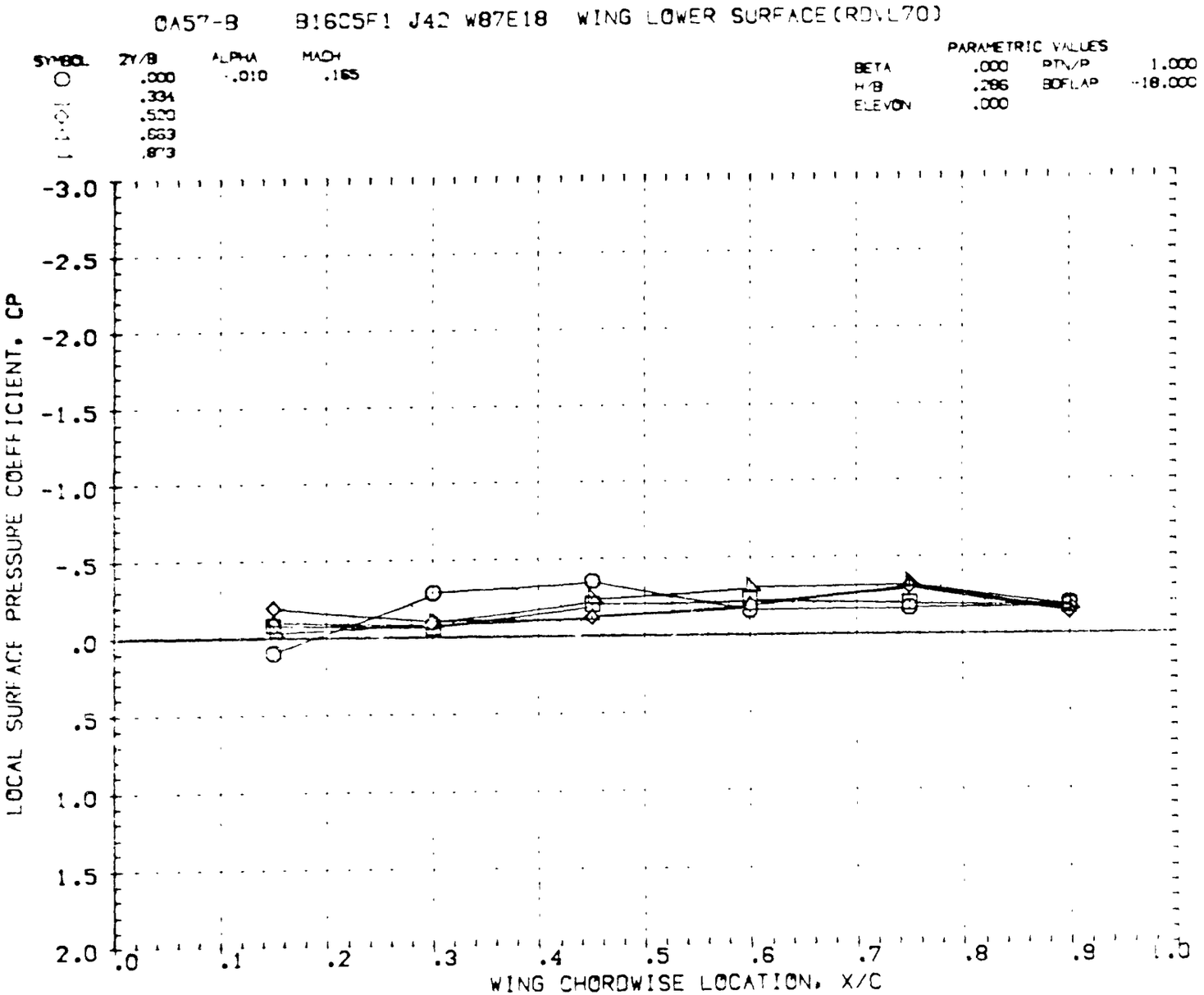


FIG 83 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

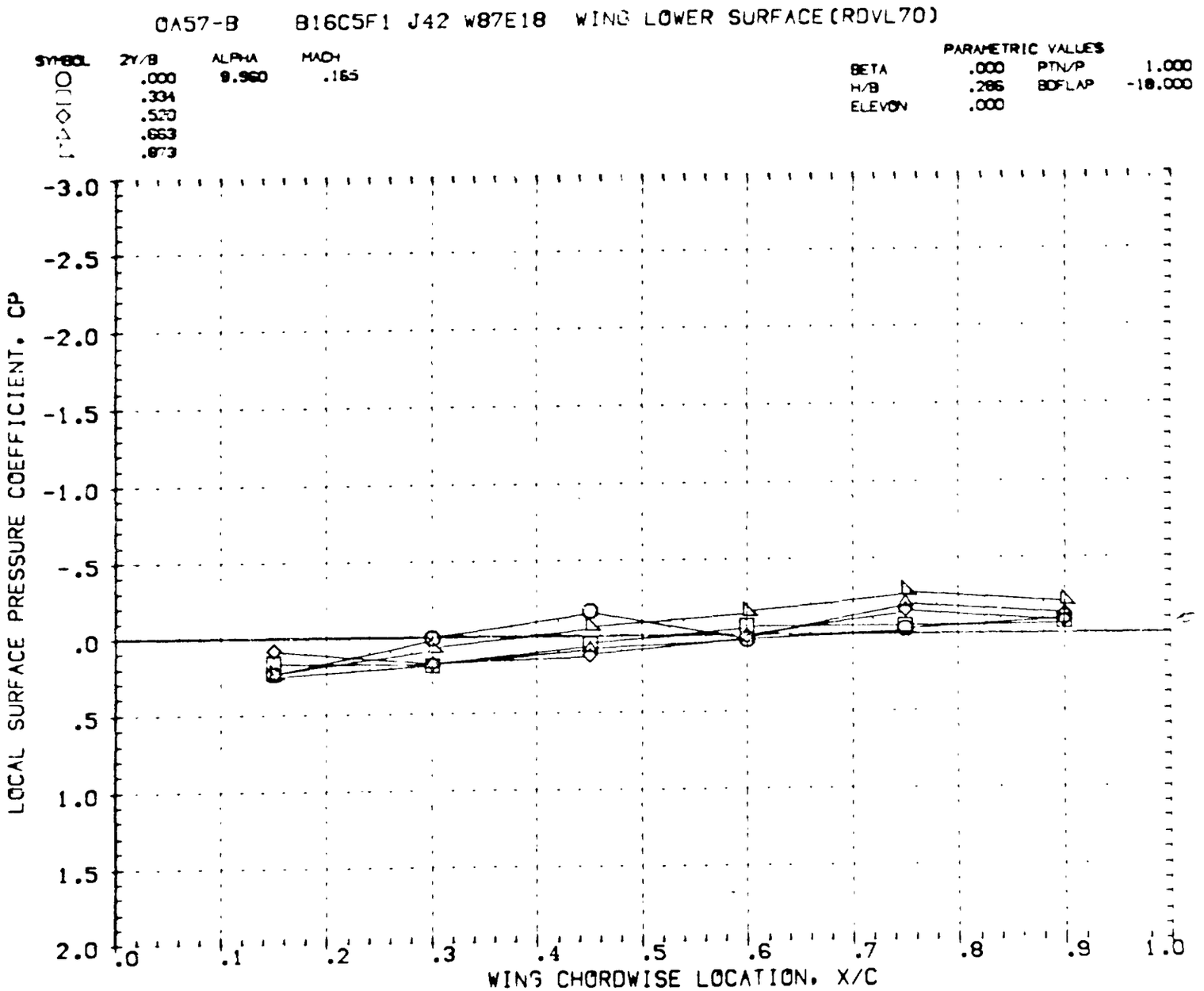


FIG 83 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

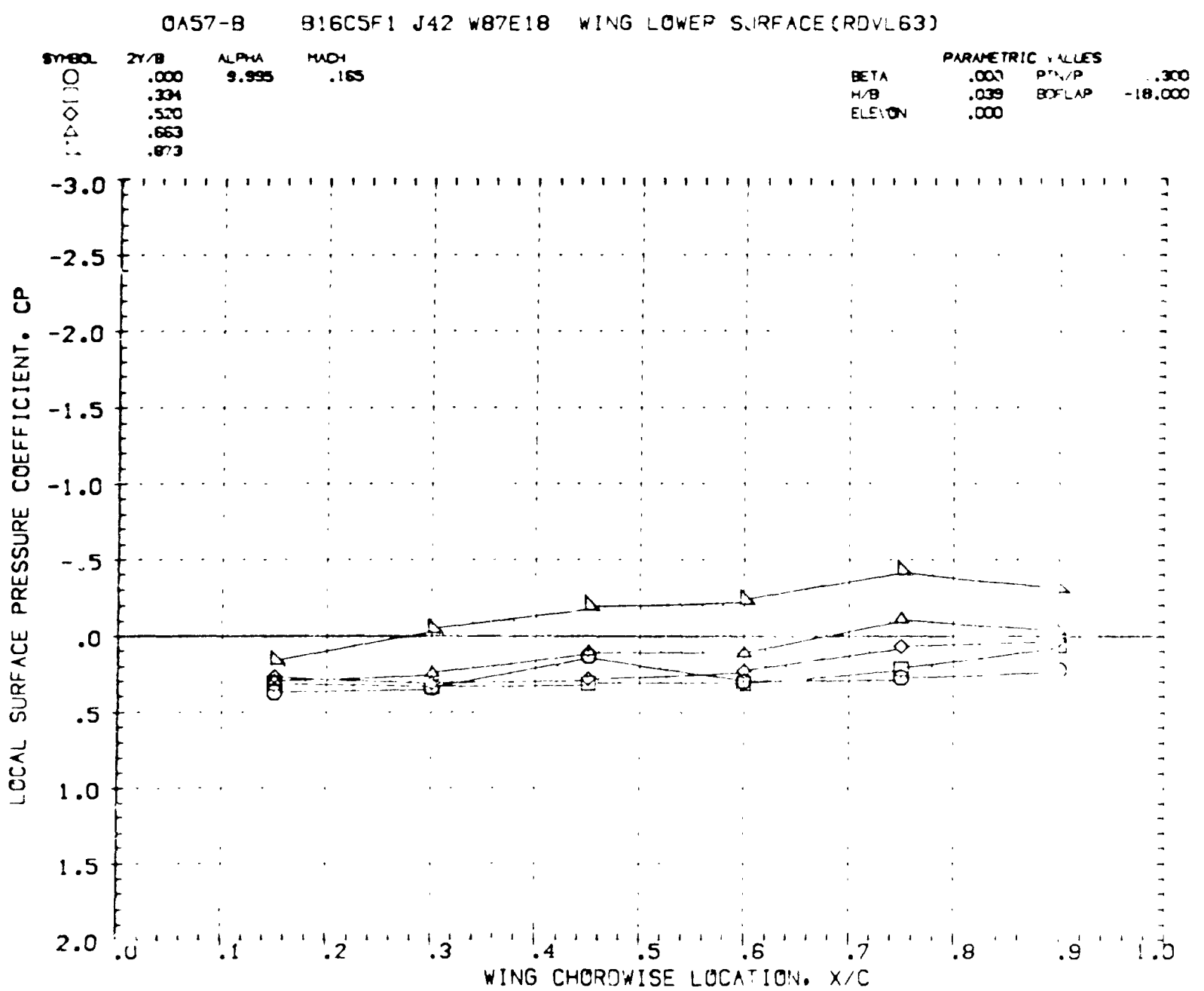


FIG 84 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

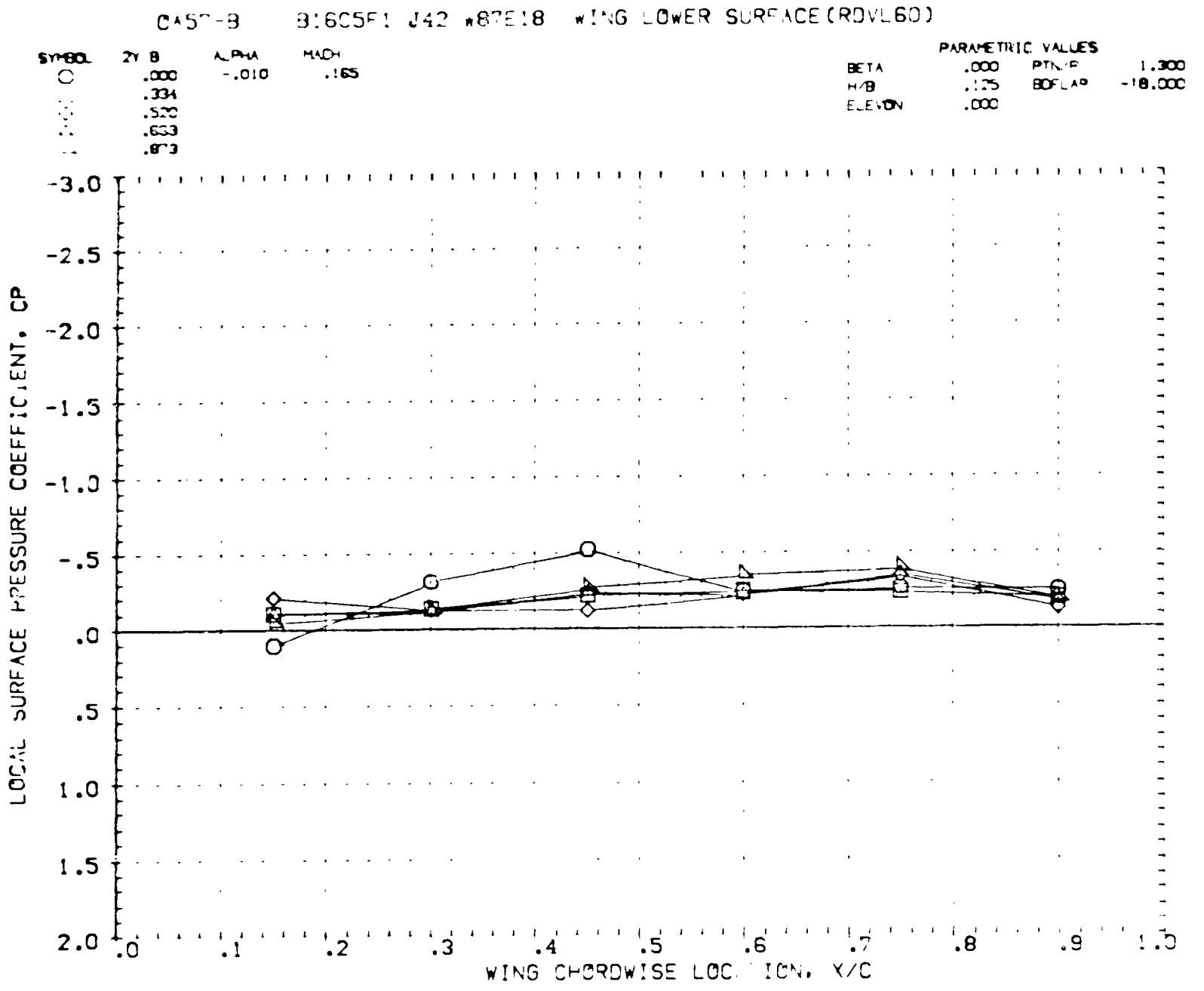


FIG 84 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

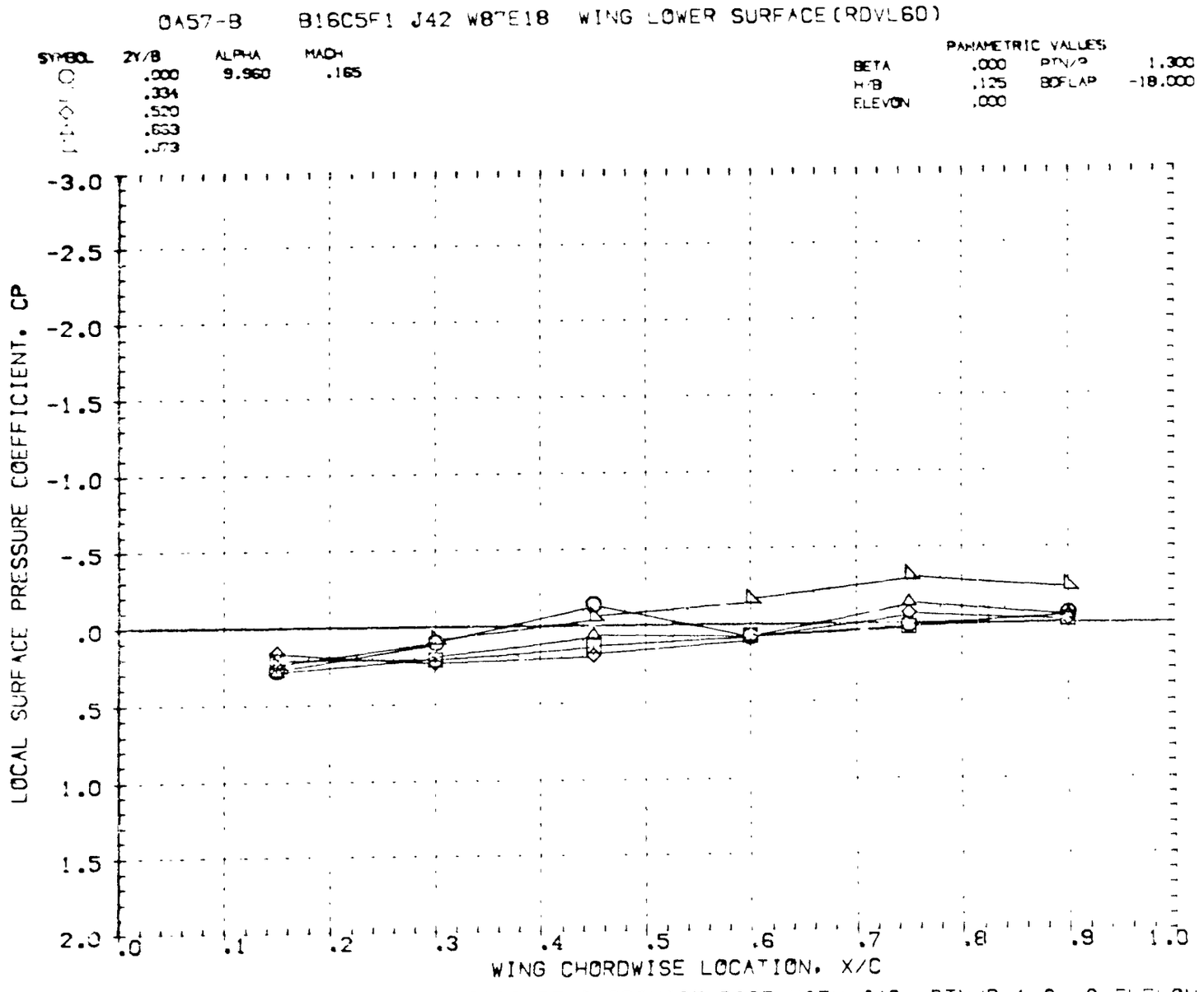


FIG 84 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

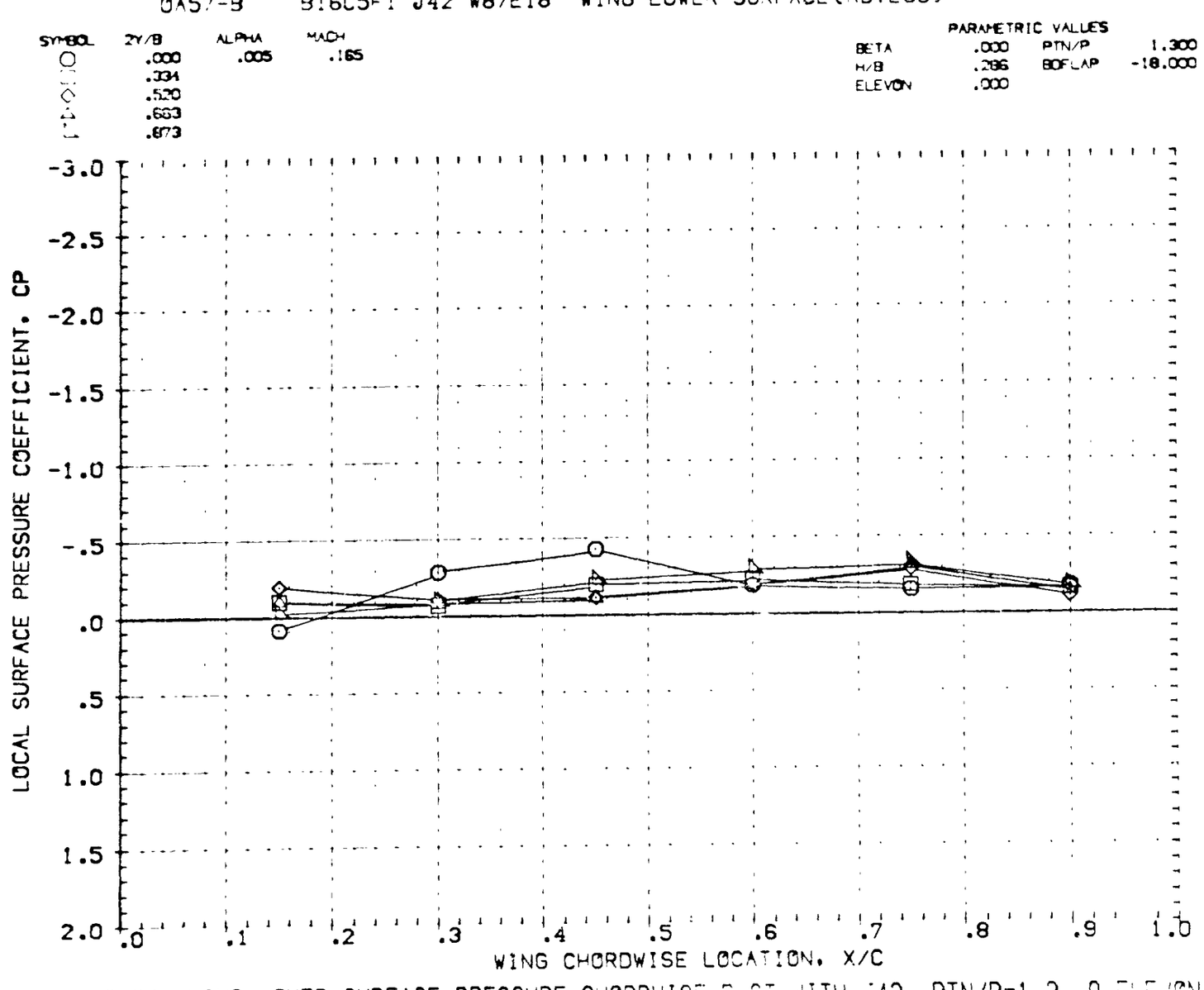


FIG 84 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

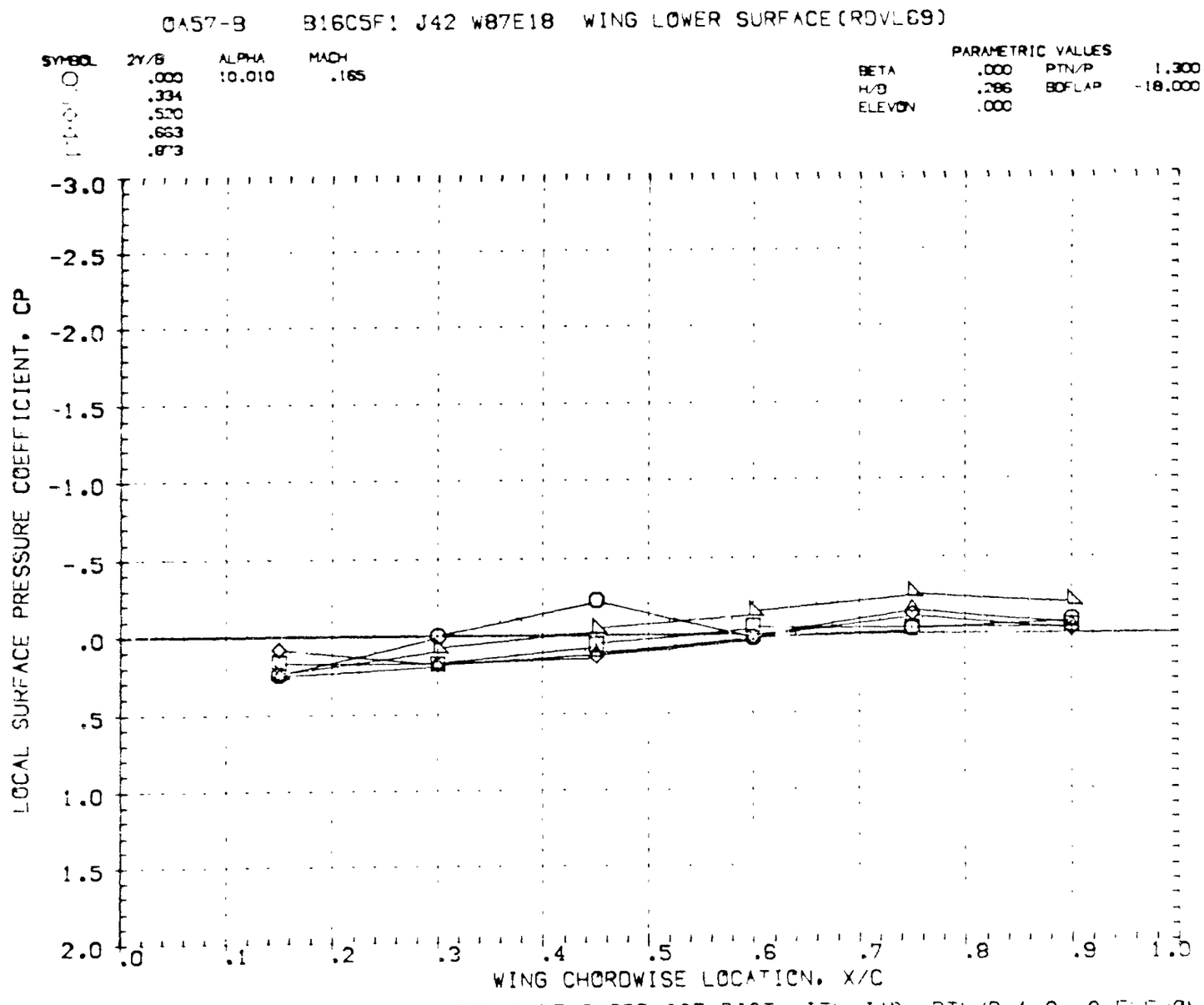


FIG 84 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

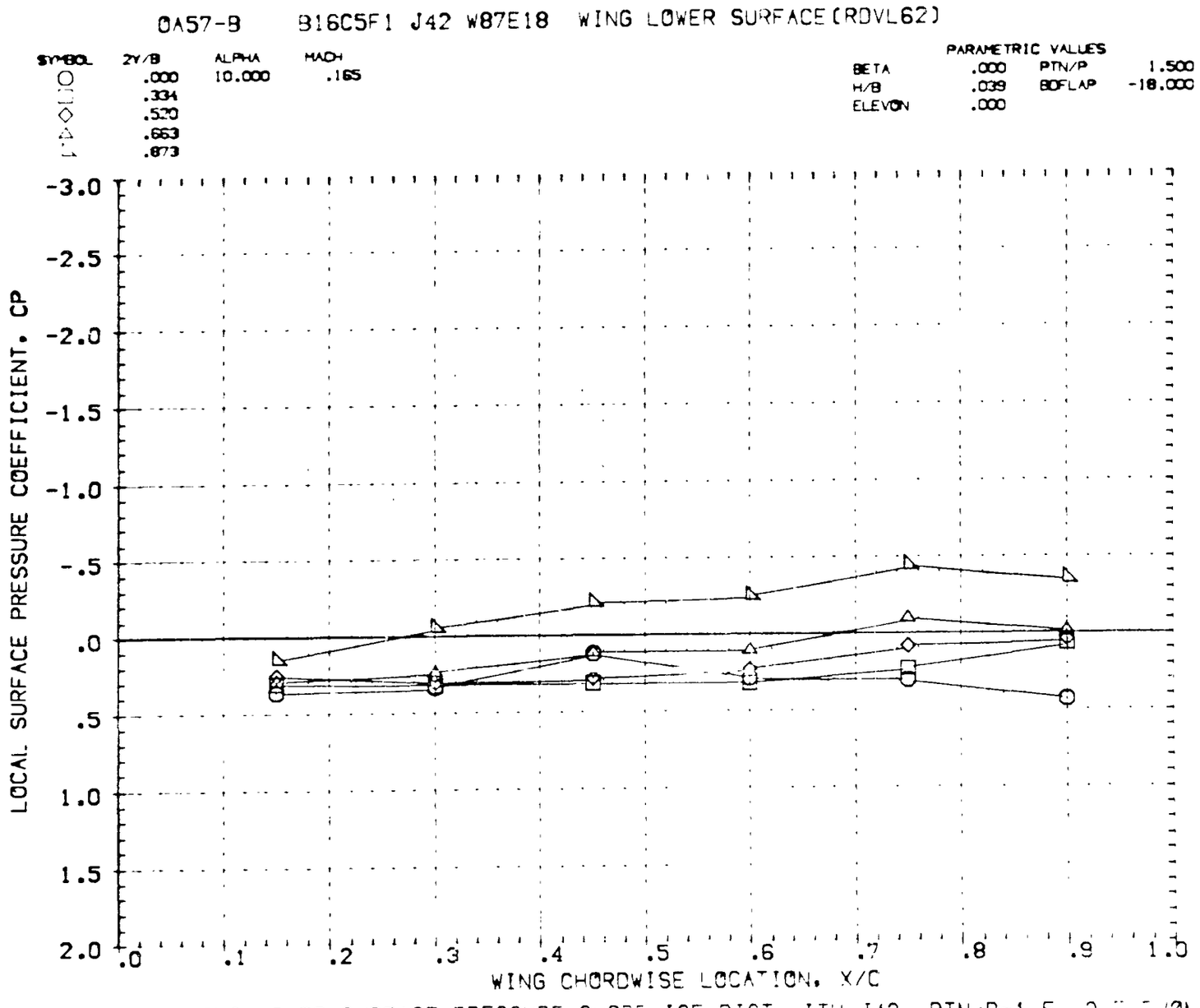


FIG 85 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

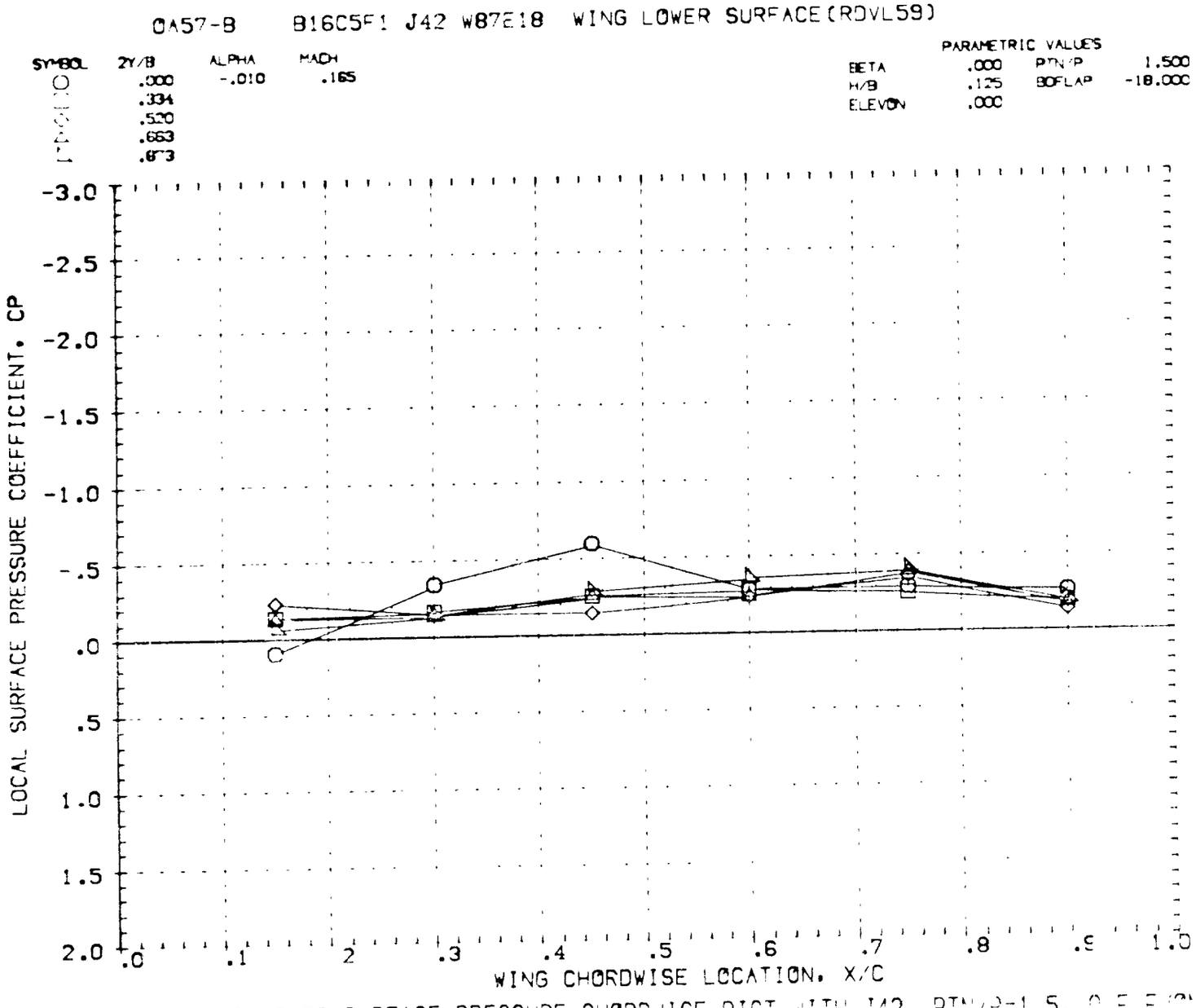


FIG 85 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

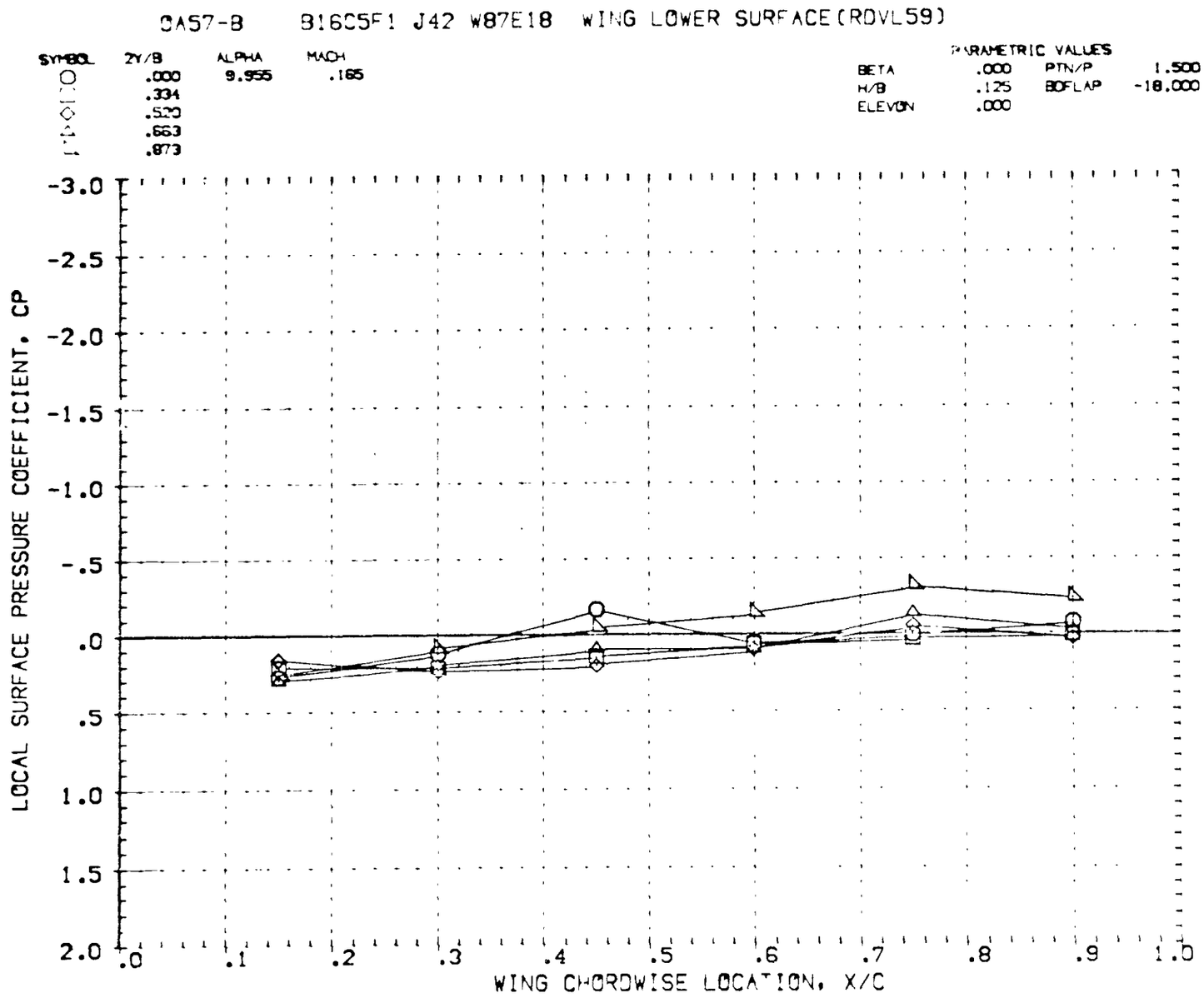


FIG 85 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

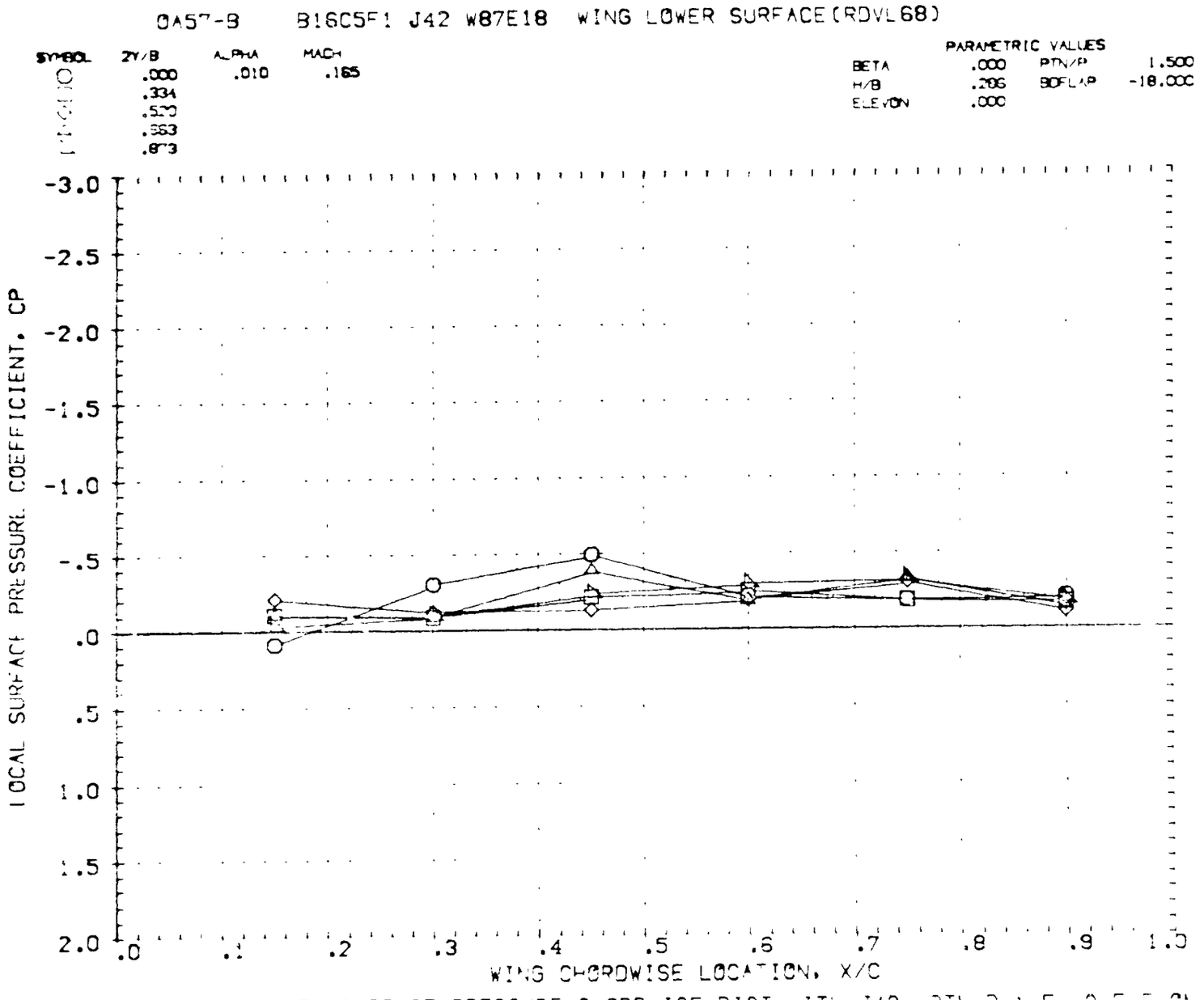


FIG 85 WING LOWER SURFACE PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

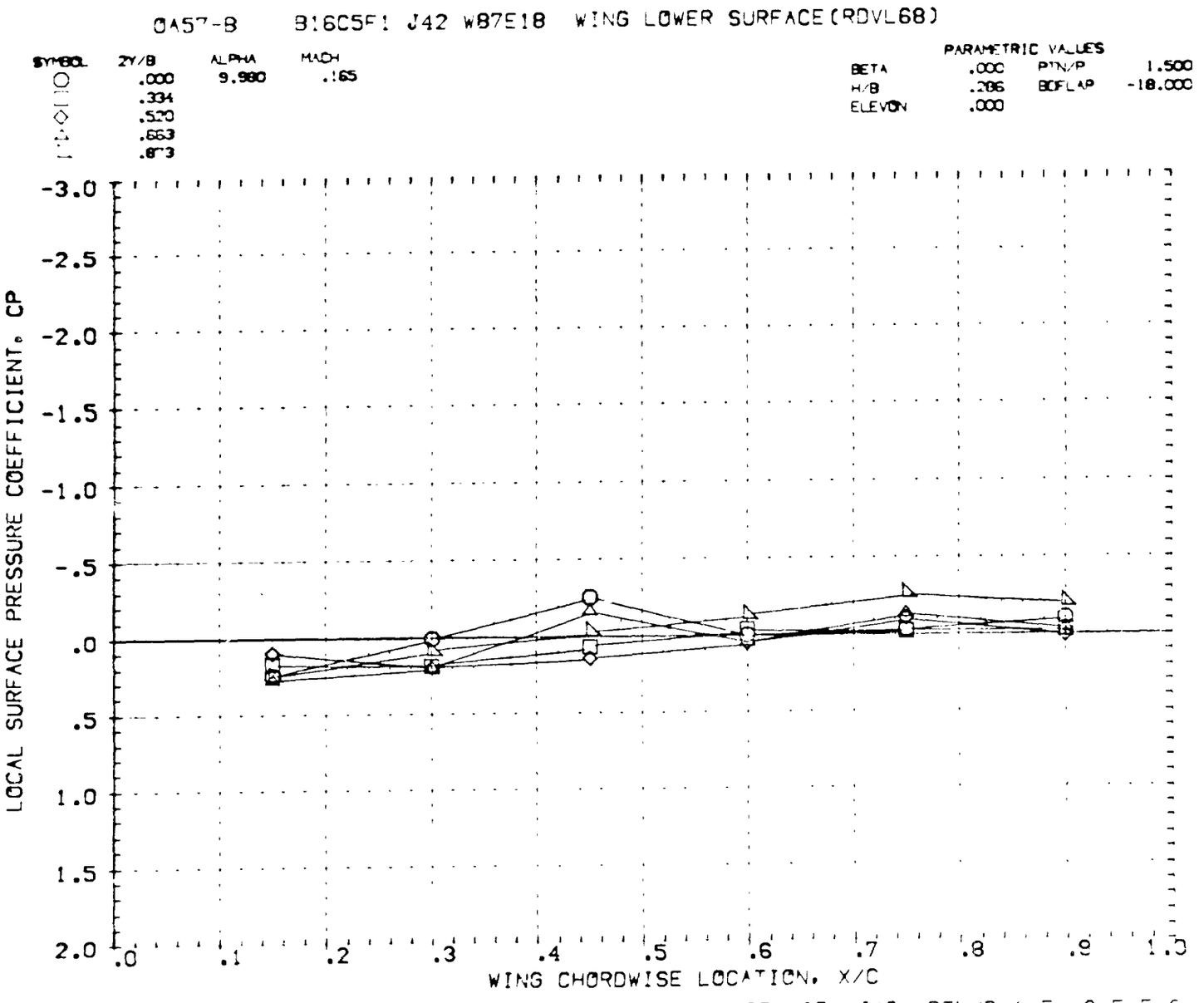


FIG 85 WING LOWER SURFACE PRESSURE C-ORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

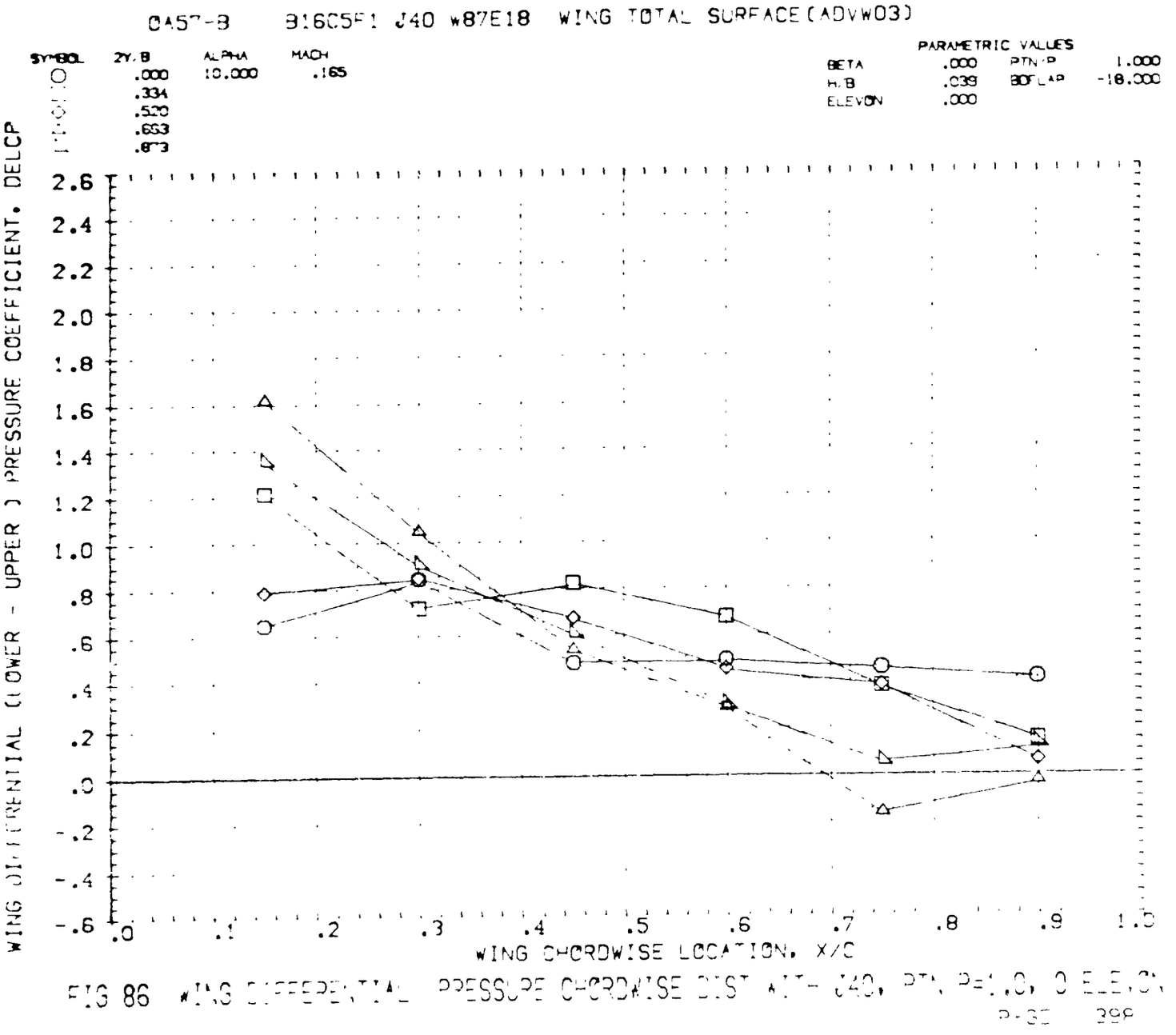


FIG 86 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN P=1.0, 0 ELEVON

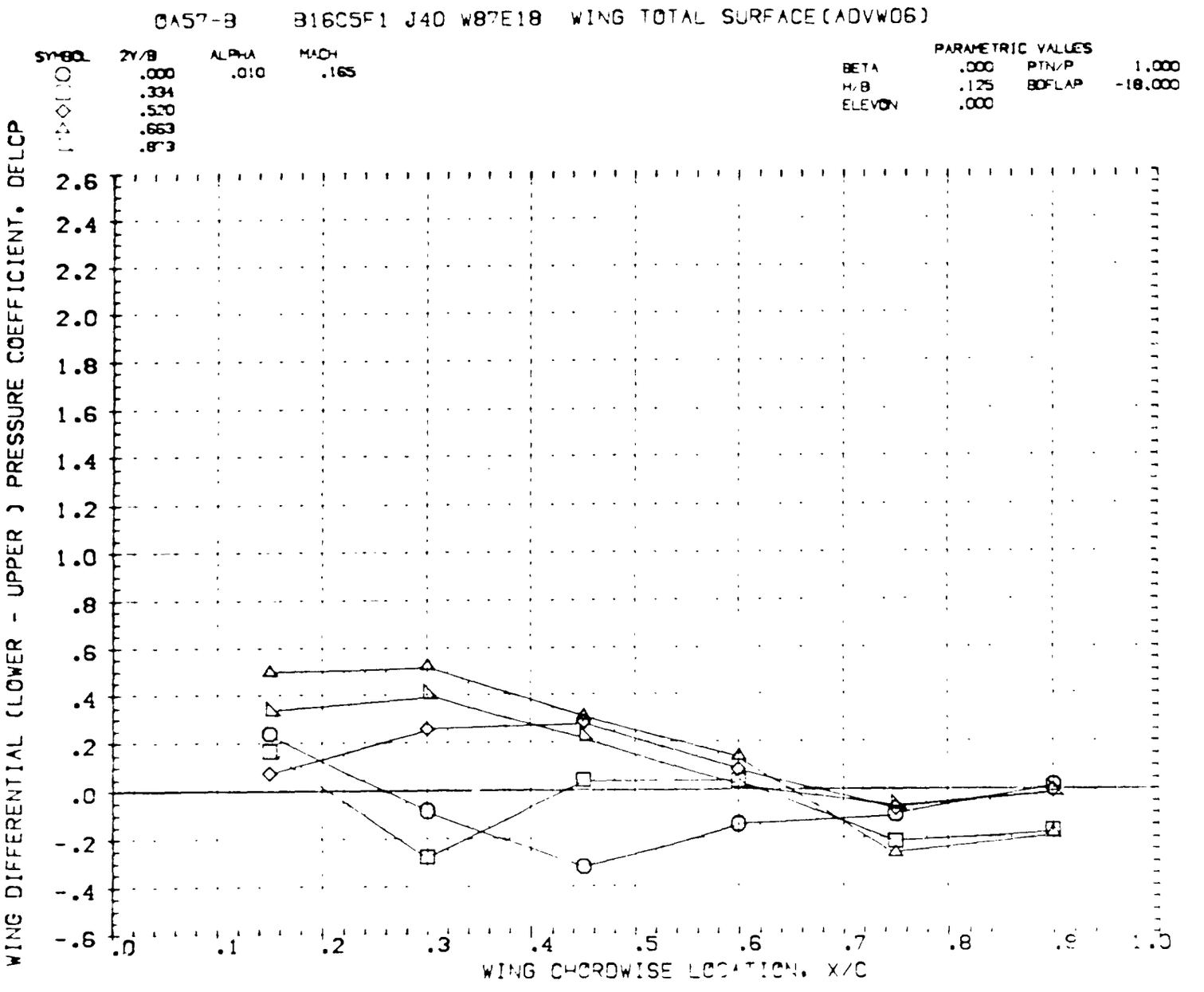


FIG 86 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

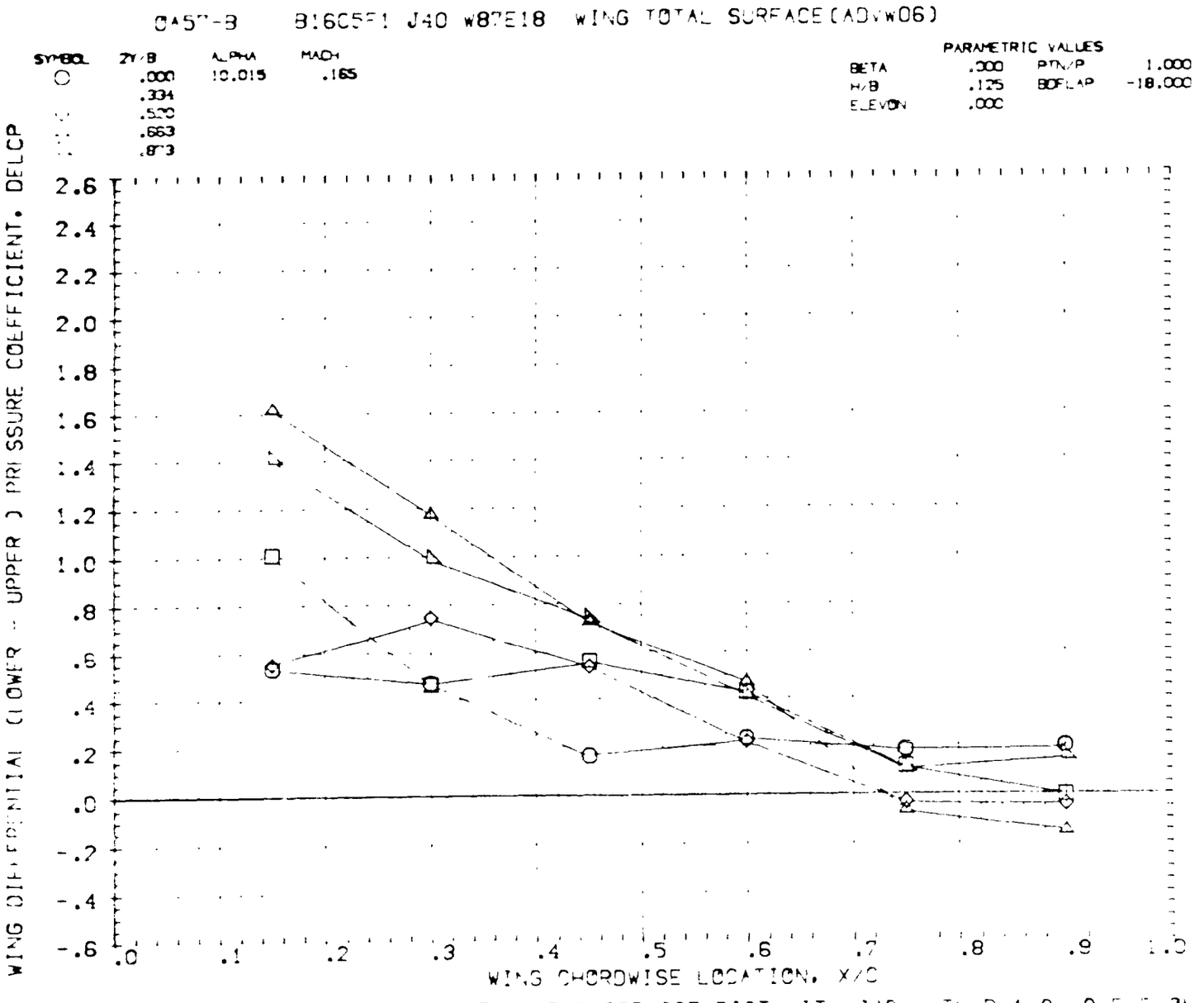


FIG 86 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, 0 ELEVON

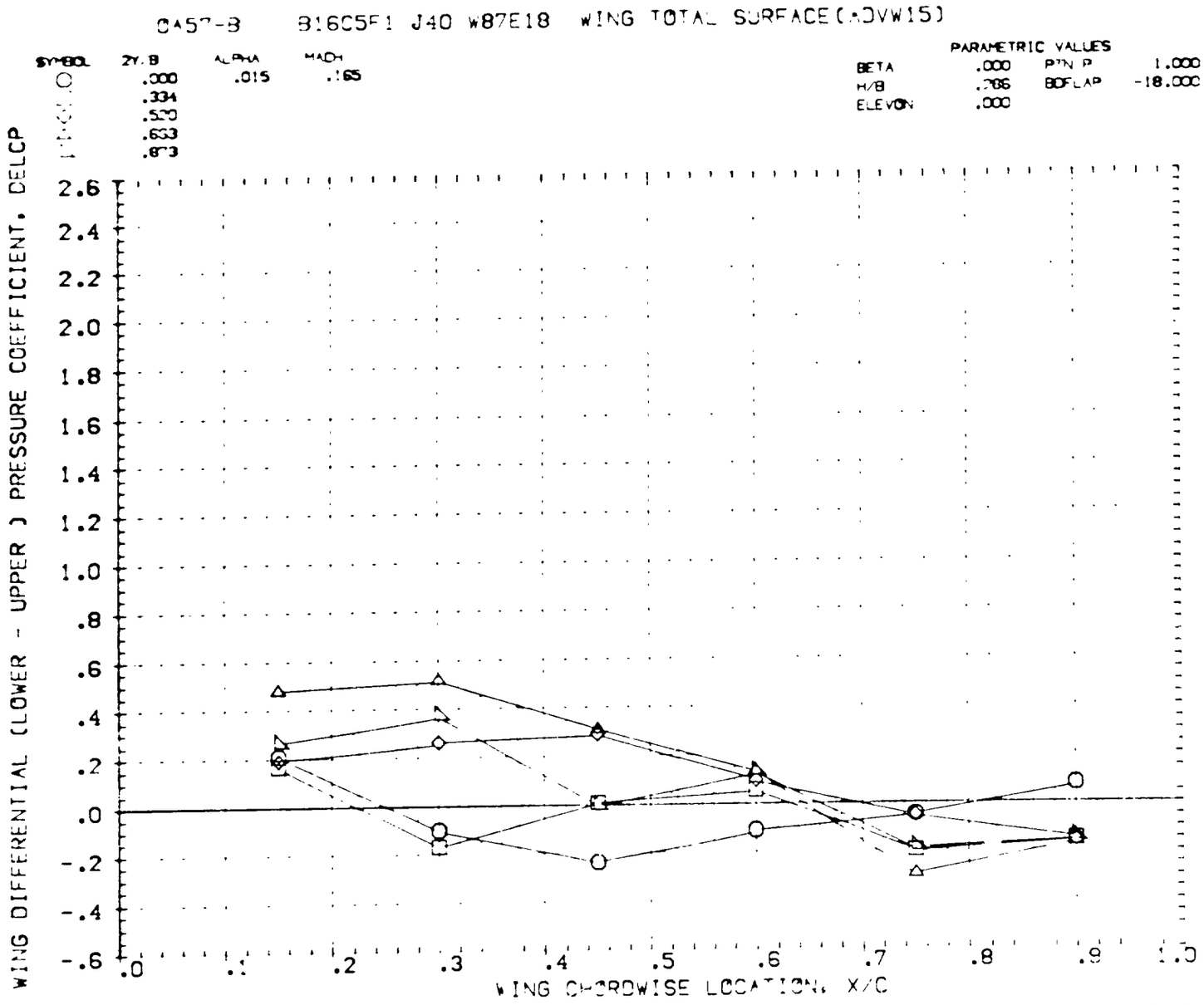


FIG 86 WING DIFFERENTIAL PRESSURE C-CRDWISE DIST WITH J40, PTN/PE=1.0, 0 ELEV

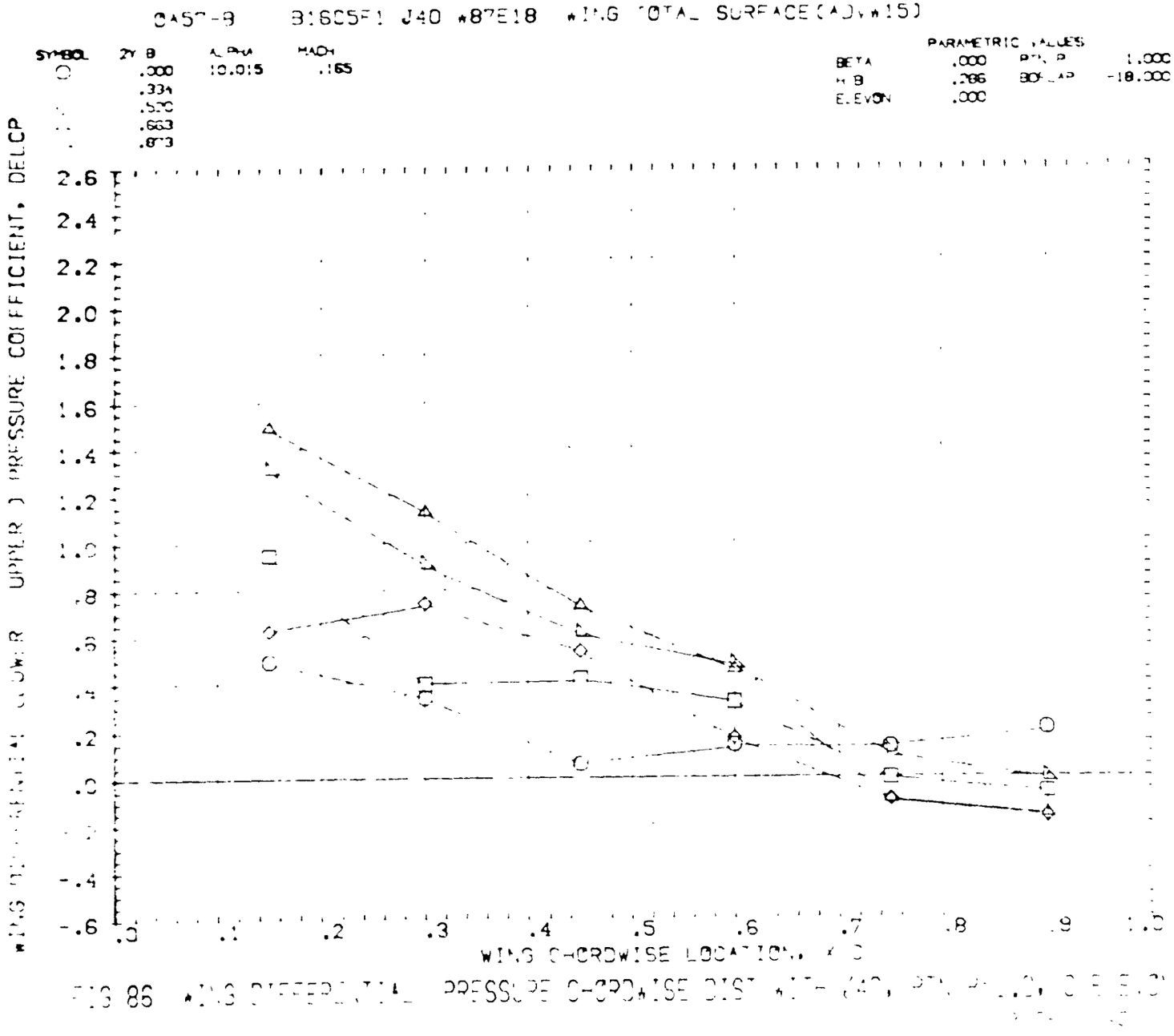


FIG 86 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH (AD, BETA, ELEVON)

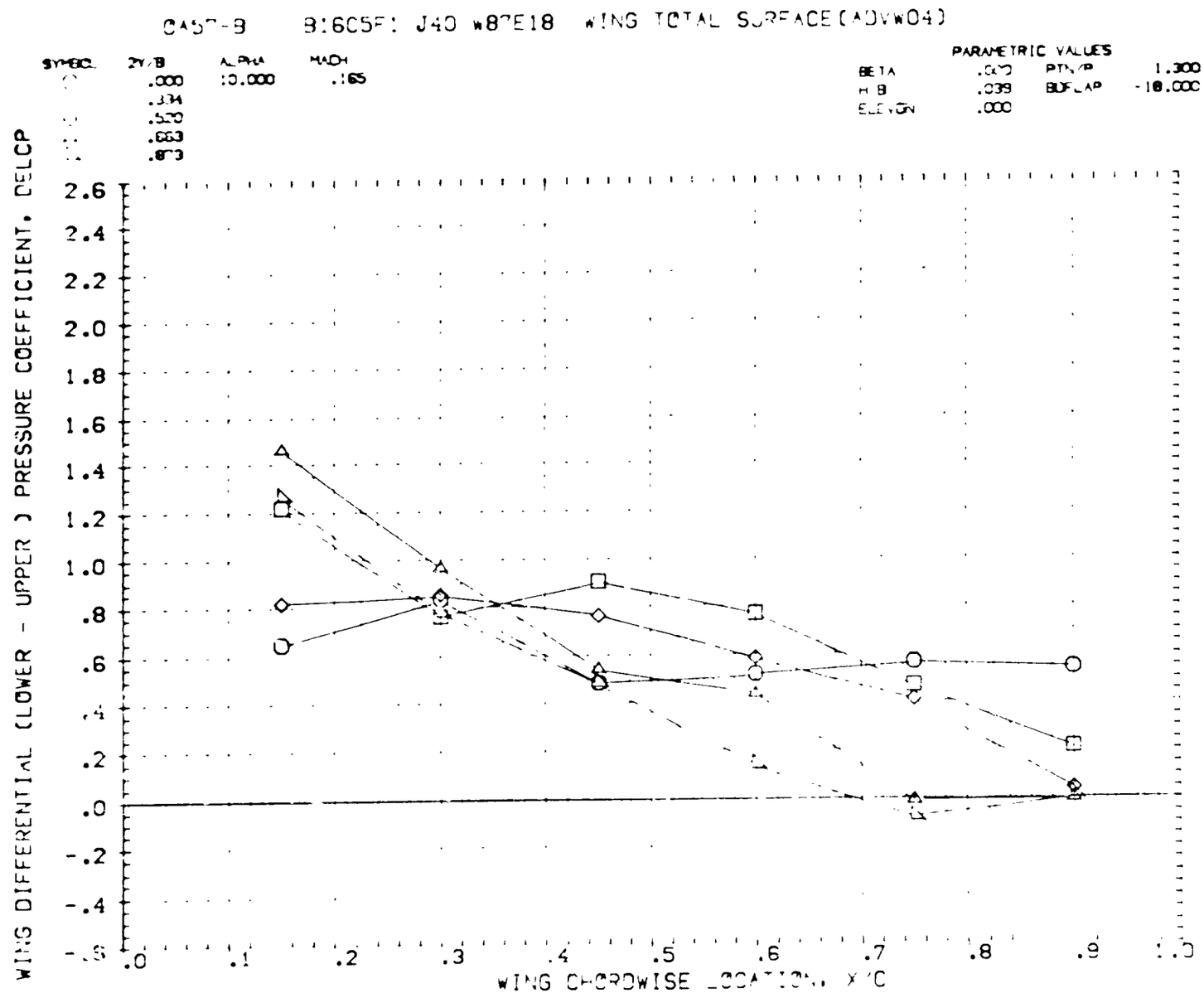


FIG 87 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN, BE1.3, 0 ELEV

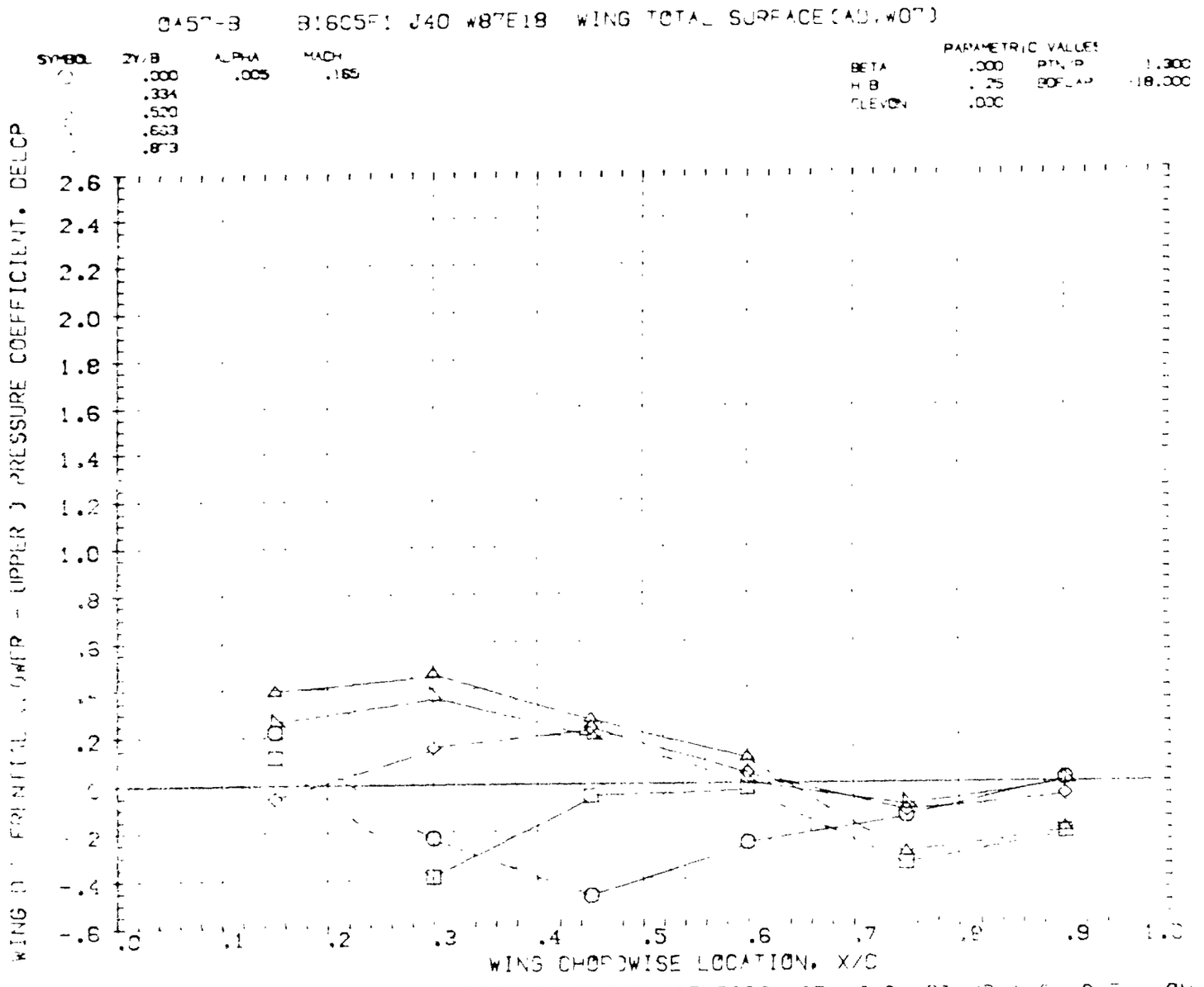


FIG 87 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

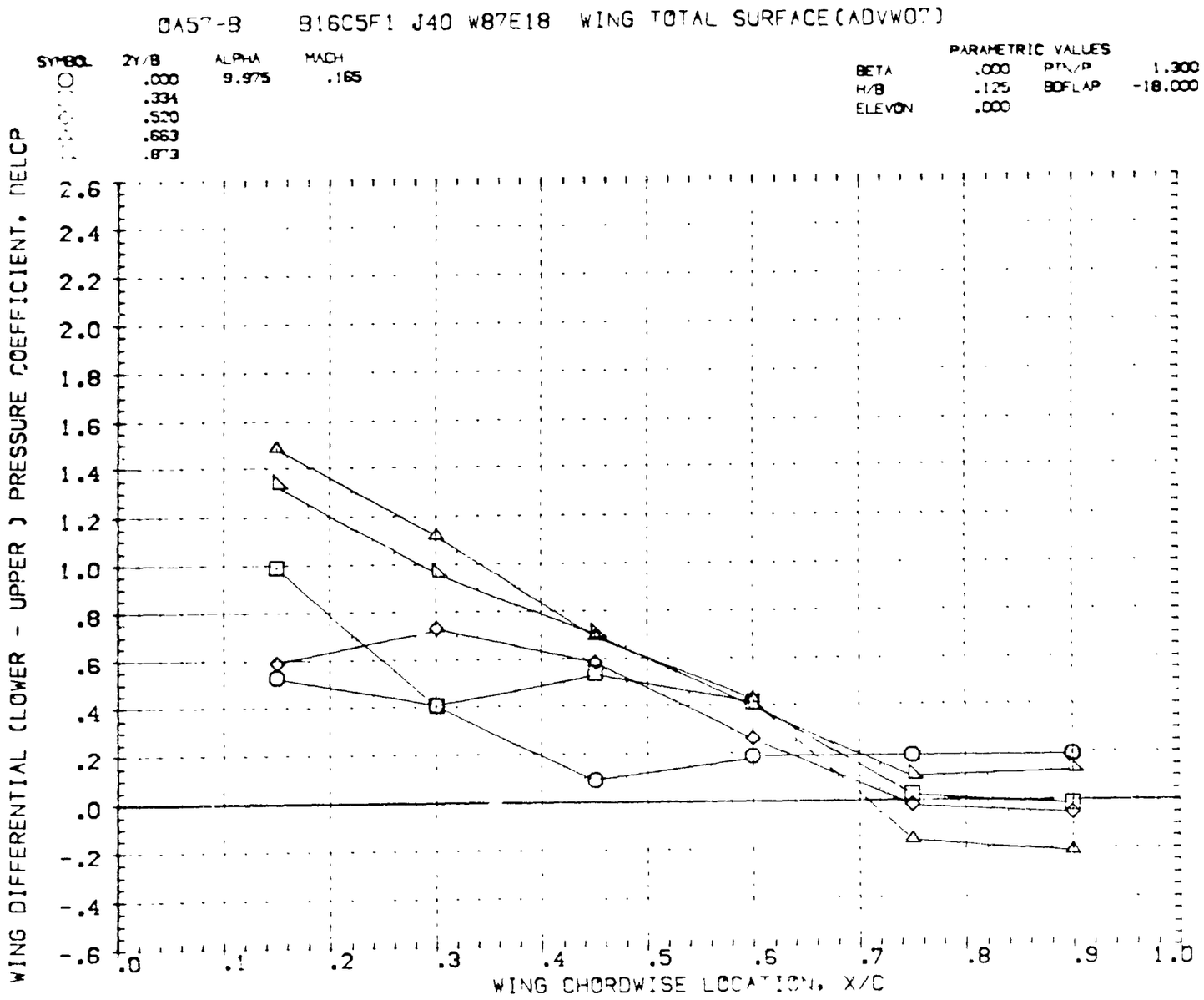


FIG 87 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

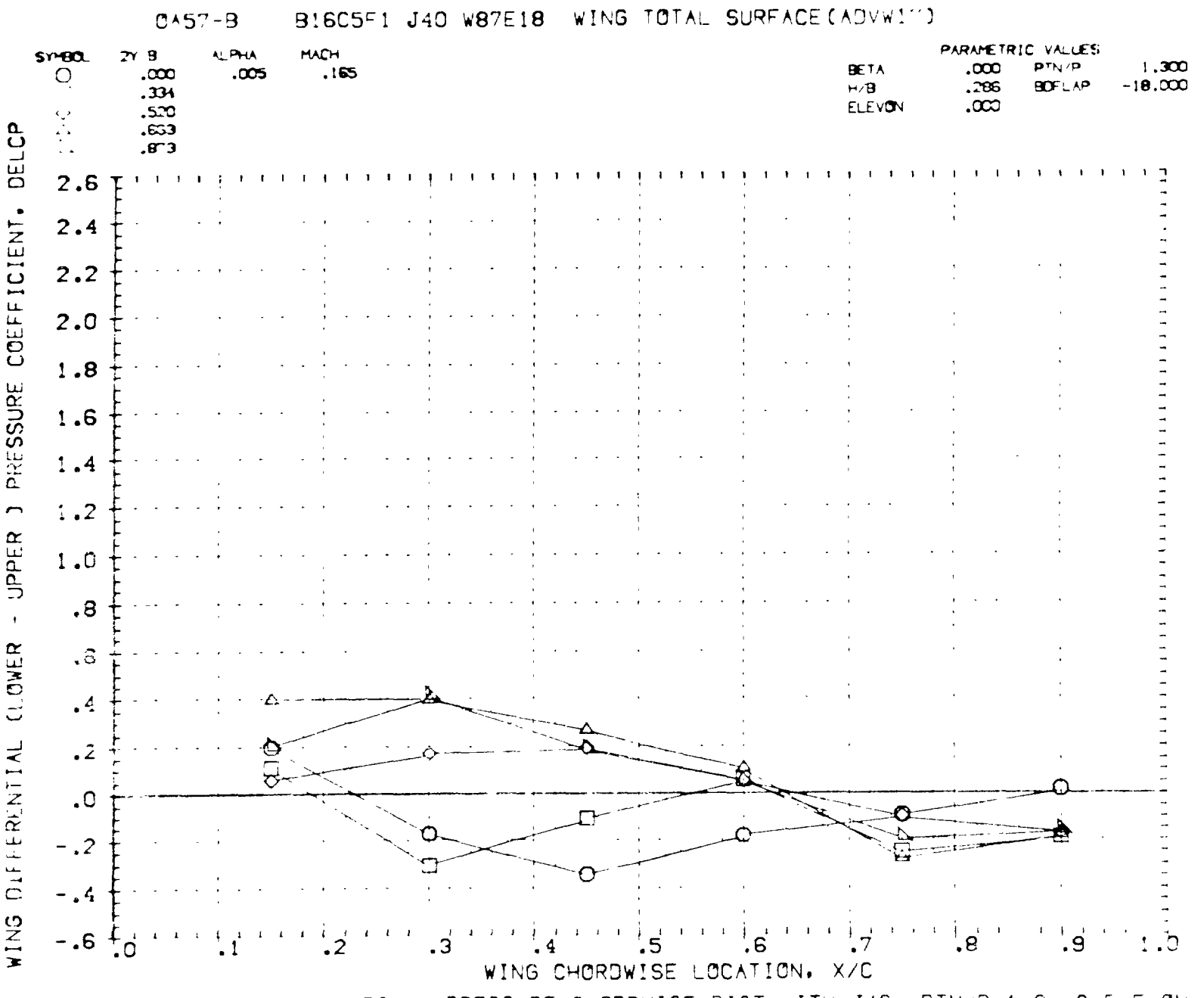


FIG 87 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3, 0 ELEVON

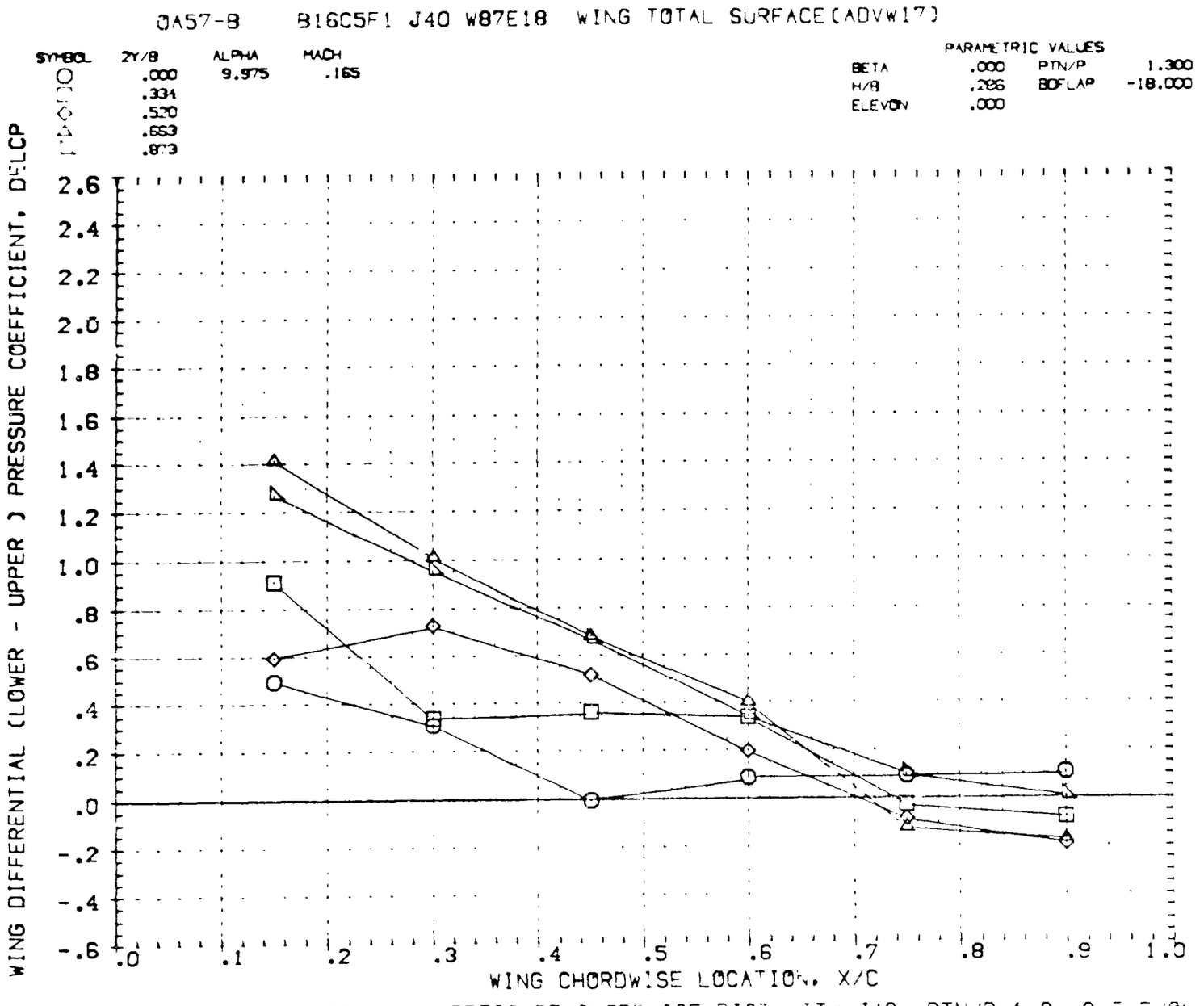


FIG 87 WING DIFFERENTIAL PRESSURE CHORDWISE DIST ITH J40, PTN/P=1.3, 0 ELEVON

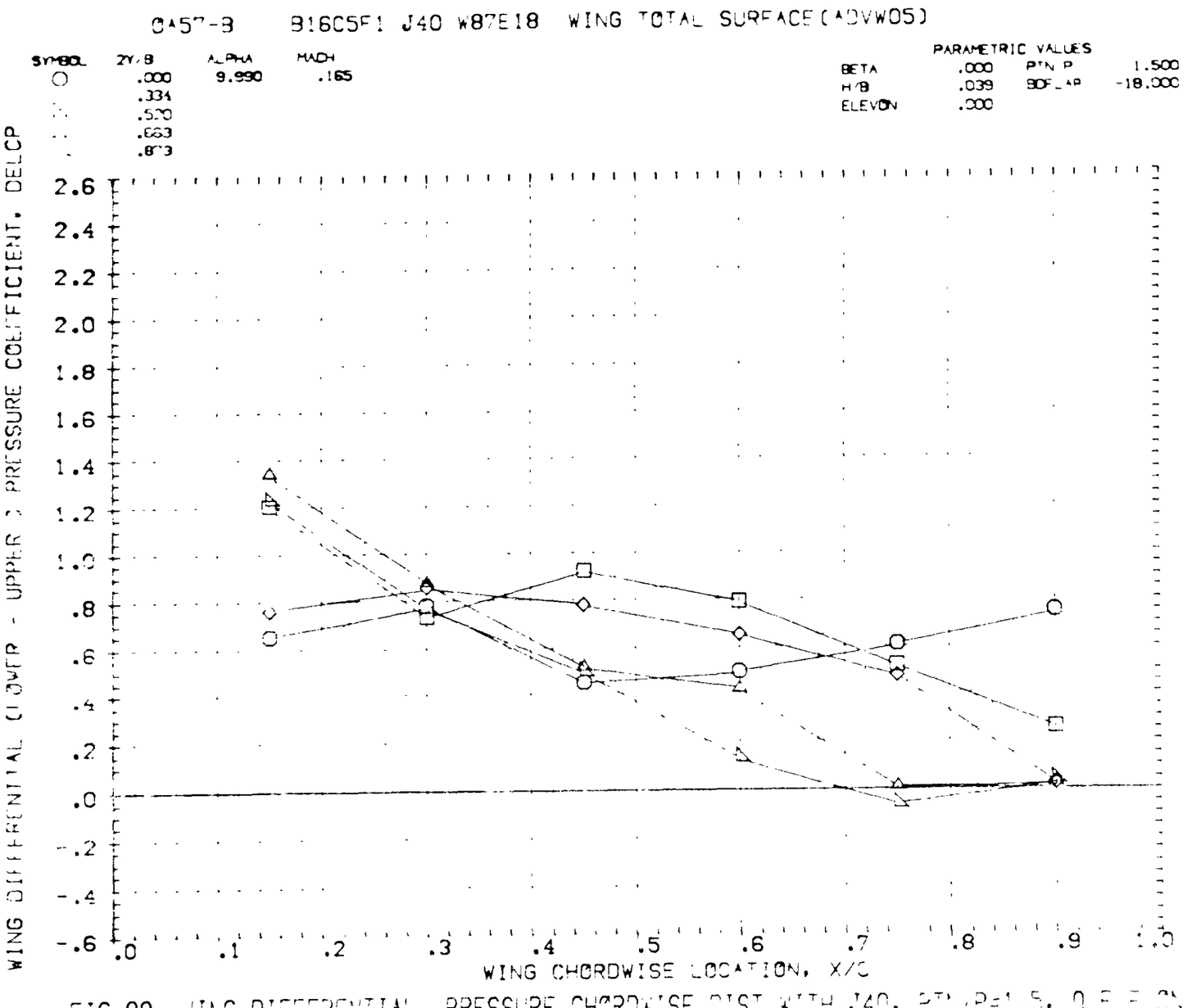


FIG 88 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

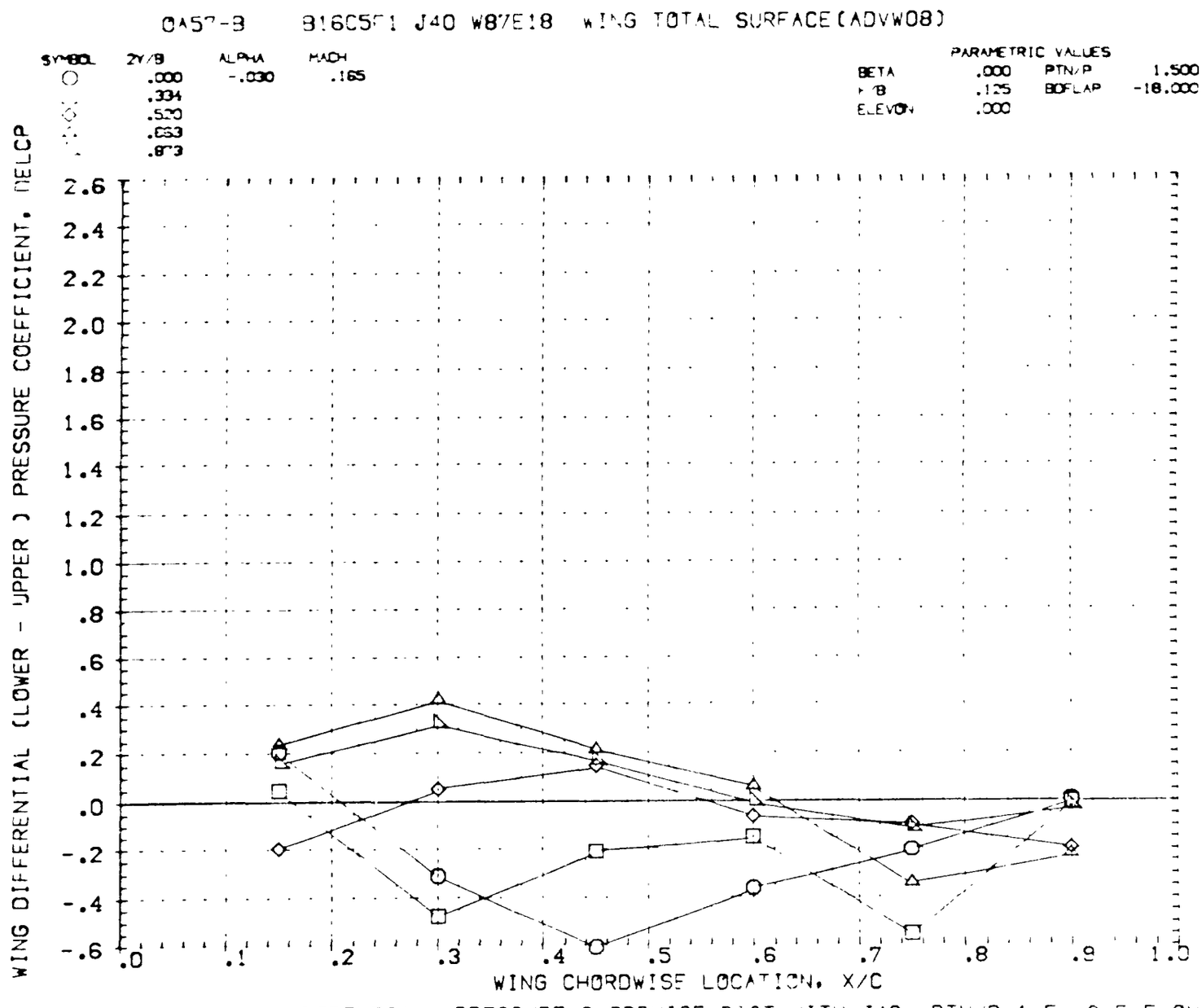


FIG 88 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5, 0 ELEVON

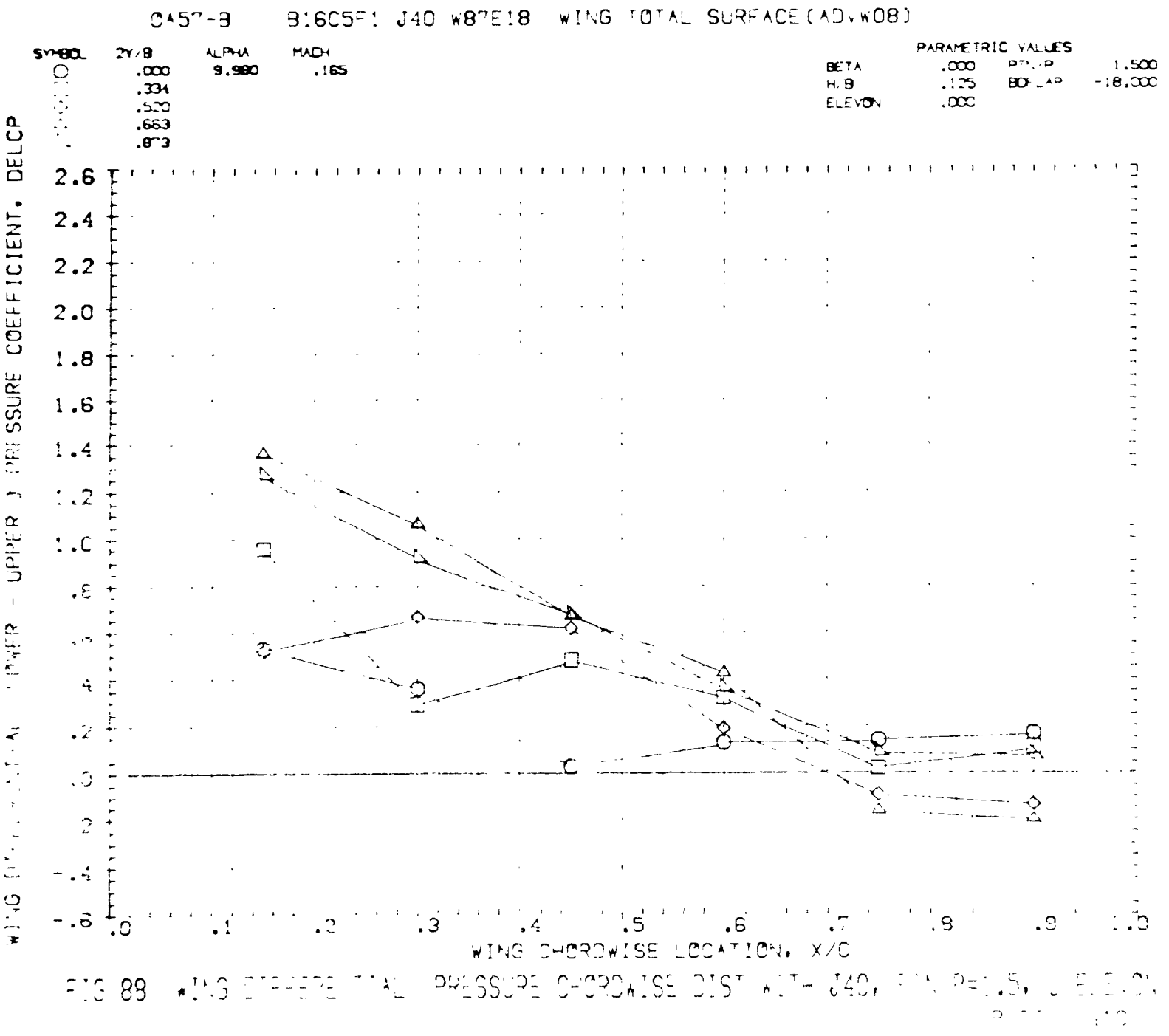


FIG 88 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, [illegible]

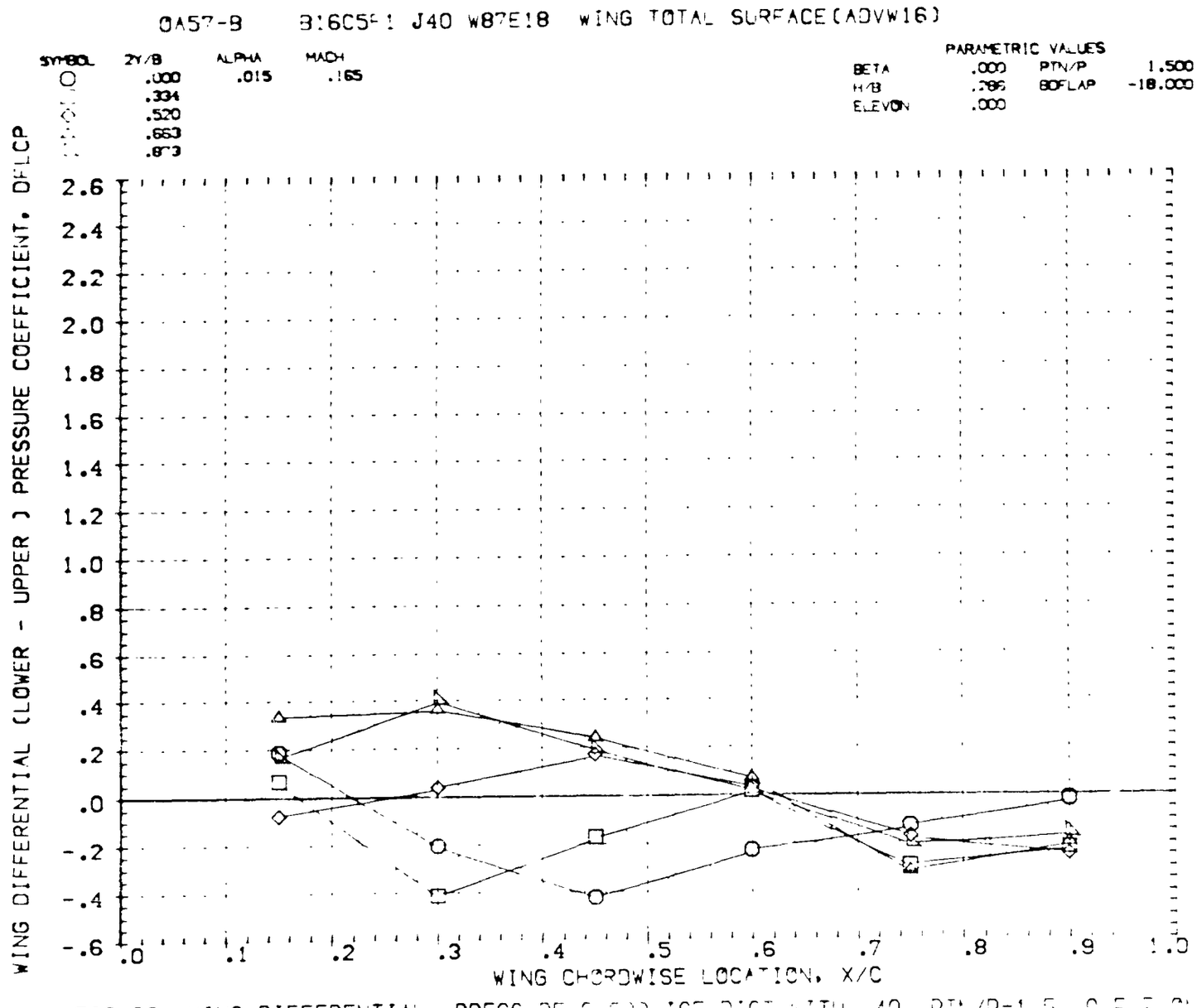
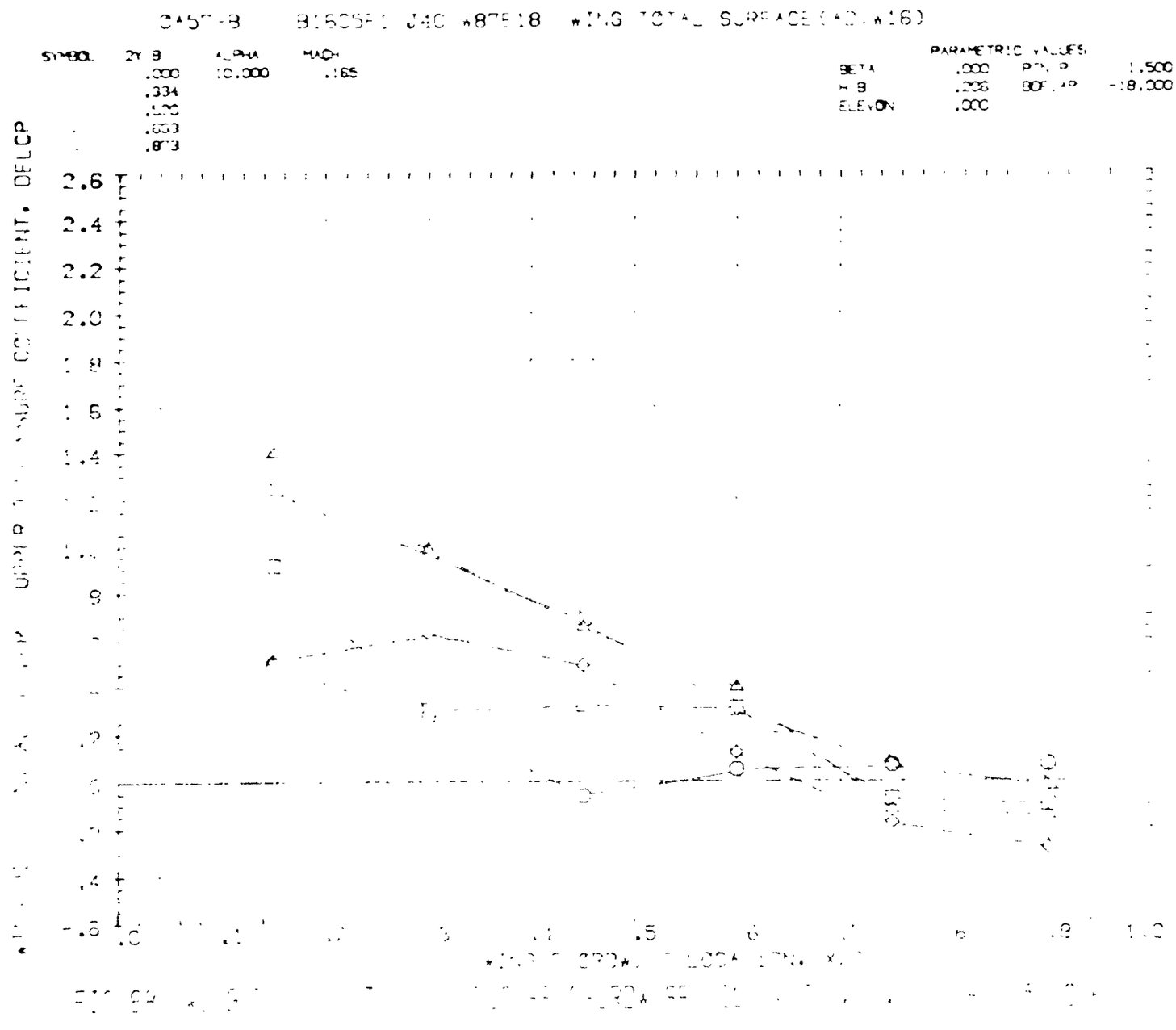


FIG 88 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH .40, PTN/P=1.5, 0 ELEVON


SYMBOL
ALPHA
MACH
.165
PARAMETRIC VALUES
BETA
.000
ELEVON
.000
2.6
2.4
2.2
2.0

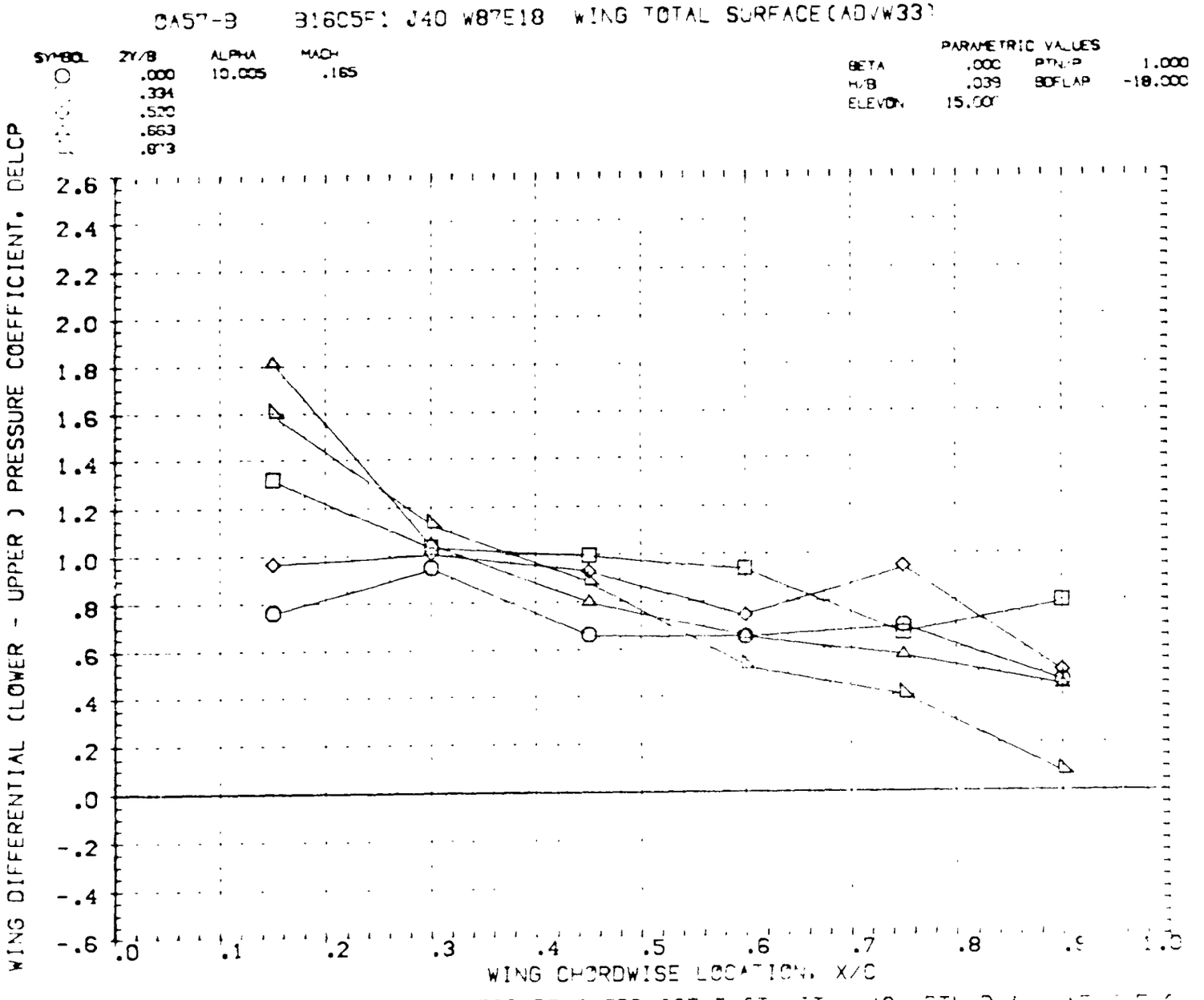
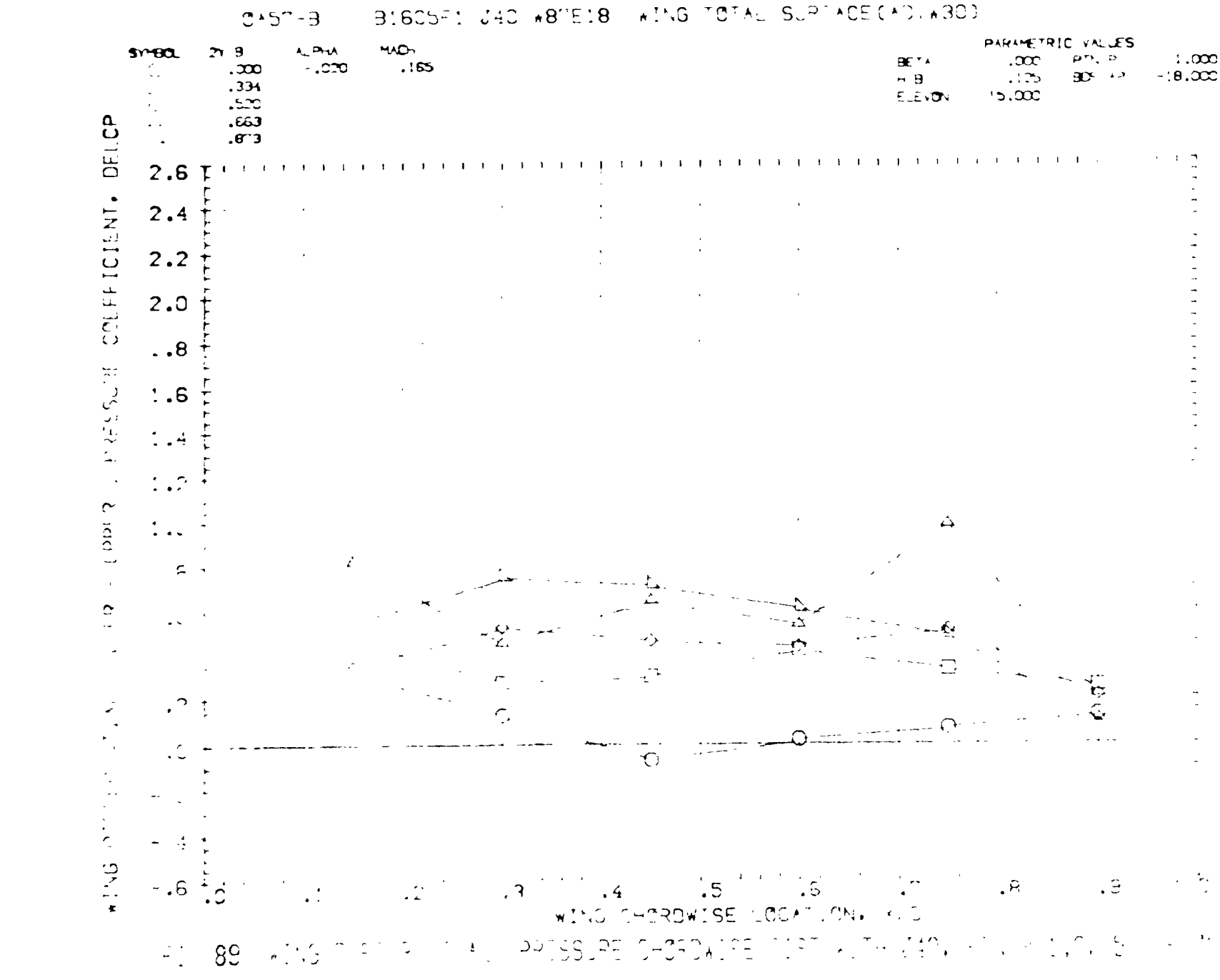


FIG 89 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.0, BF FLAP=


SYMBOL
ETA
.000
.334
.520
.663
.873
ALPHA
-1.020
MACH
.165
PARAMETRIC VALUES
BETA .000
ETA .125
ELEVON 15.000
2.6
2.4
2.2
2.0
.8
1.6
-.6
.4
.5
.6
.8
.9
WING CHORDWISE LOCATION, X/C

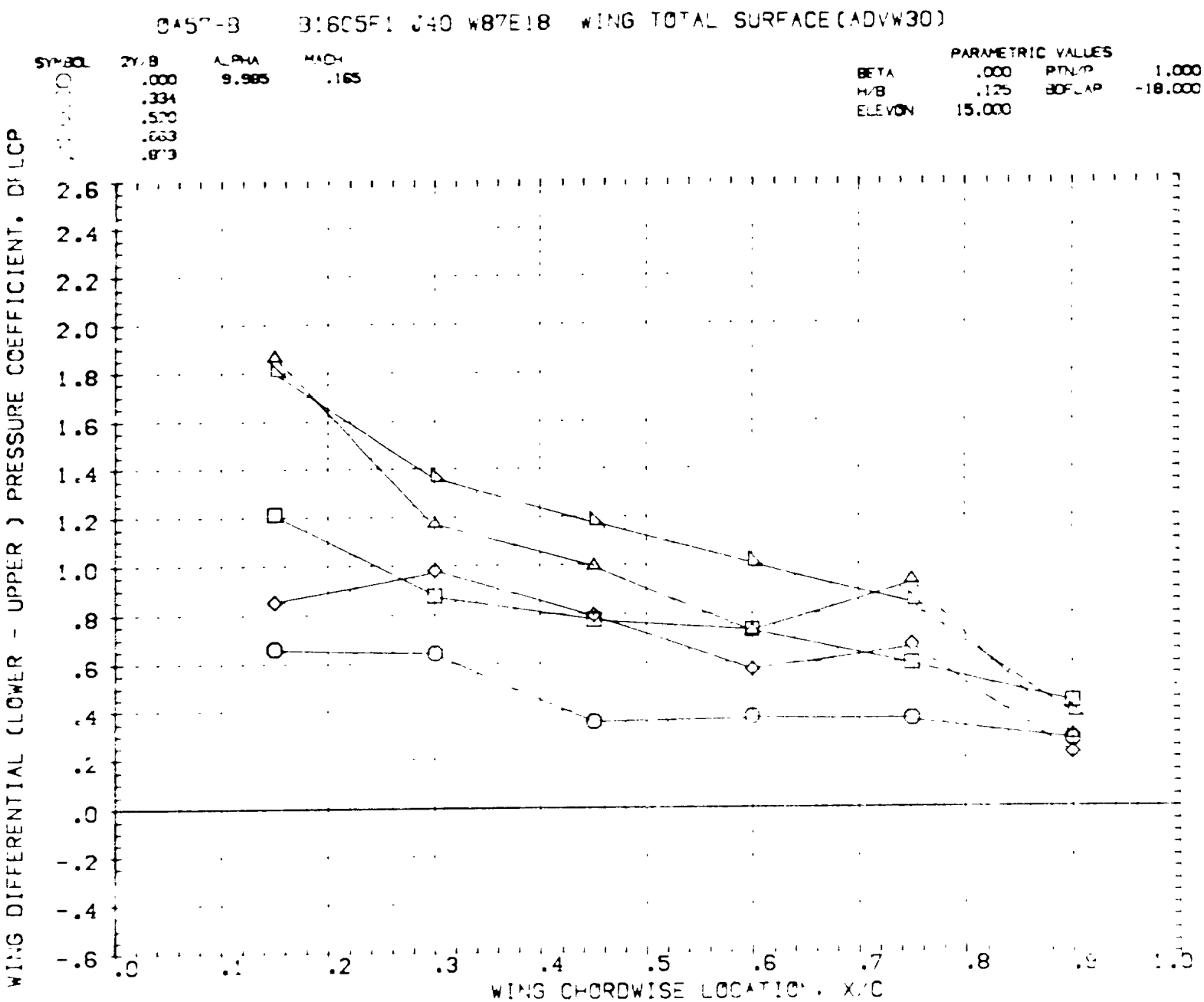
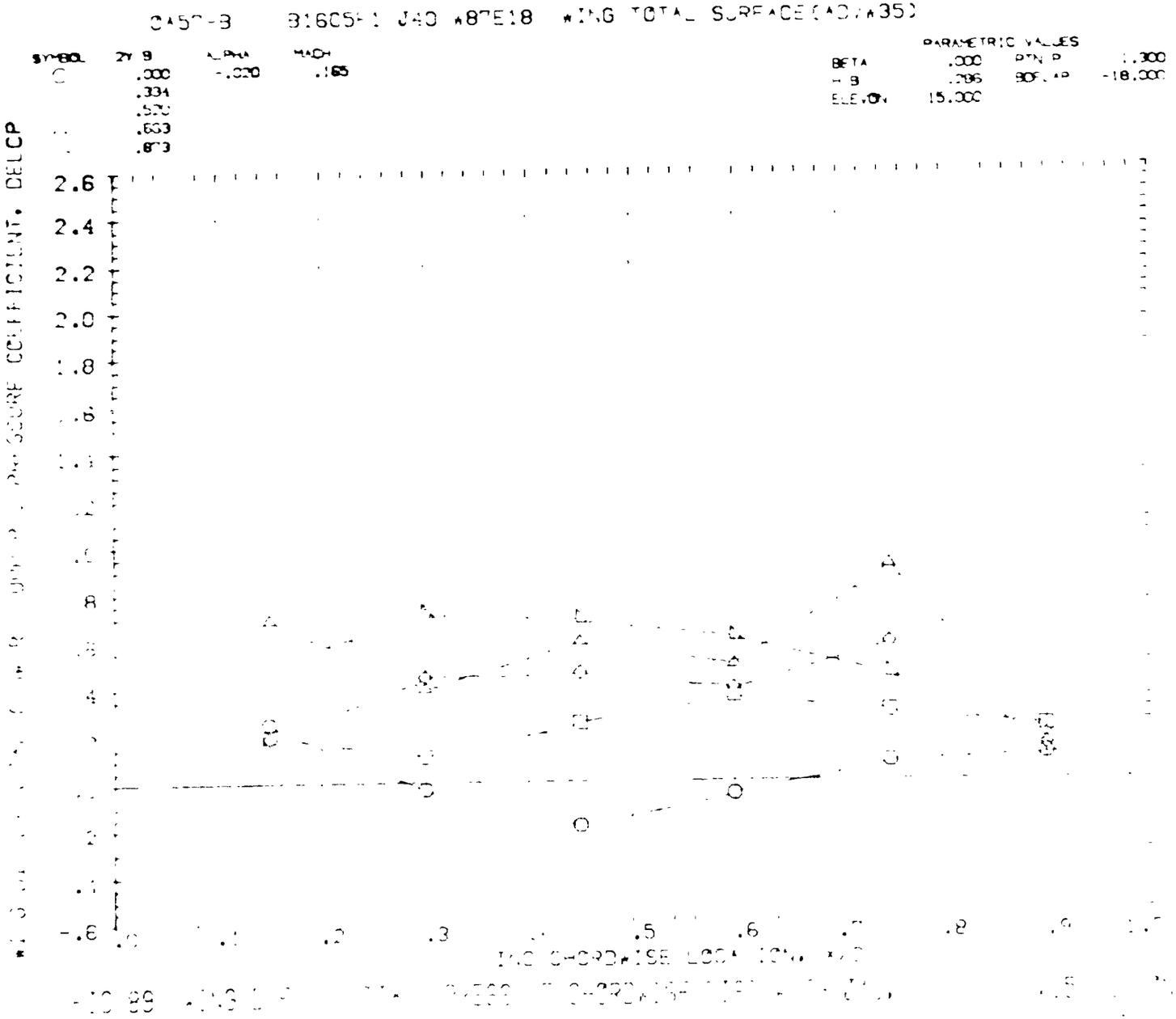


FIG 89 WING DIFFERENTIAL PRESSURE CHORDWISE DIST , TH J40, PTN REL , 15


CASE-B B1605-1 J40 A8E18 WING TOTAL SURFACE(AD/A35)
PARAMETRIC VALUES
BETA .000
ELEVON 15.000
2.6
2.4
2.2
2.0
1.8
.6
-.6
.1
.2
.3
.5
.6
.8

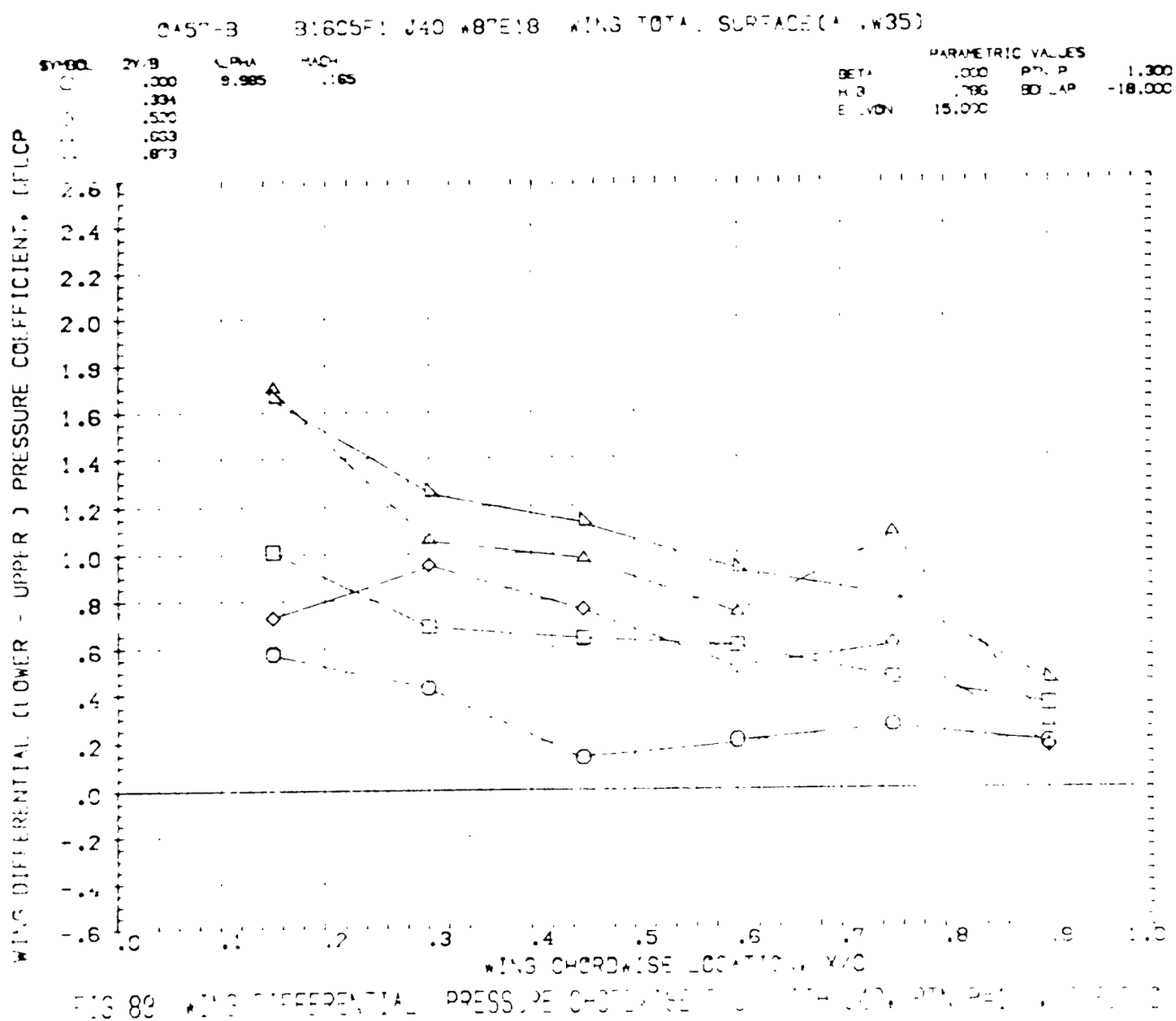
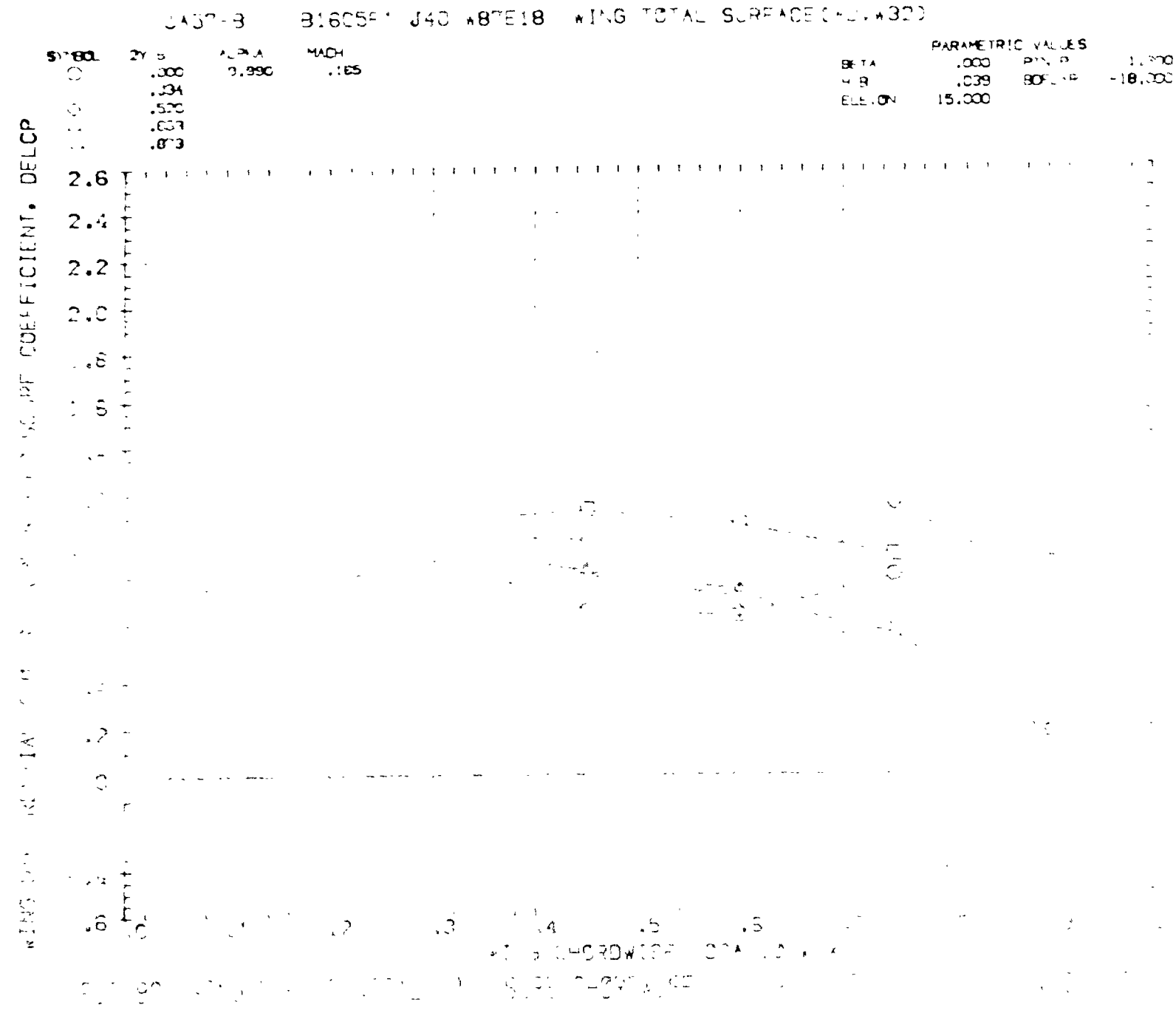


FIG 89 WING DIFFERENTIAL PRESSURE CHORDWISE [illegible]


B1605F1 J40 W8TE18 WING TOTAL SURFACE
SYMBOL
ALPHA
MACH
.165
PARAMETRIC VALUES
BETA .000
ELEVON 15.000
-18.000
DELCP
2.6
2.4
2.2
.5

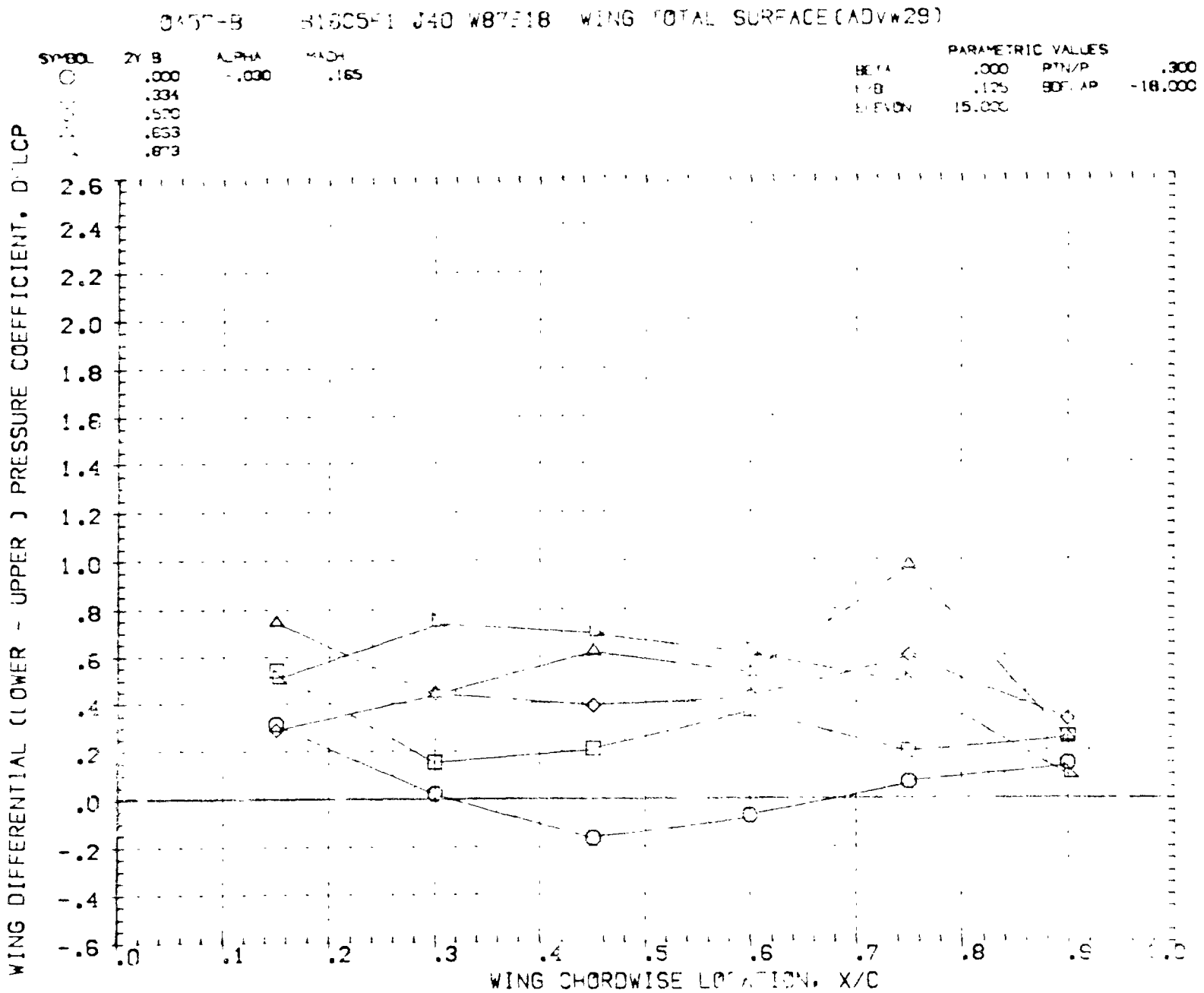
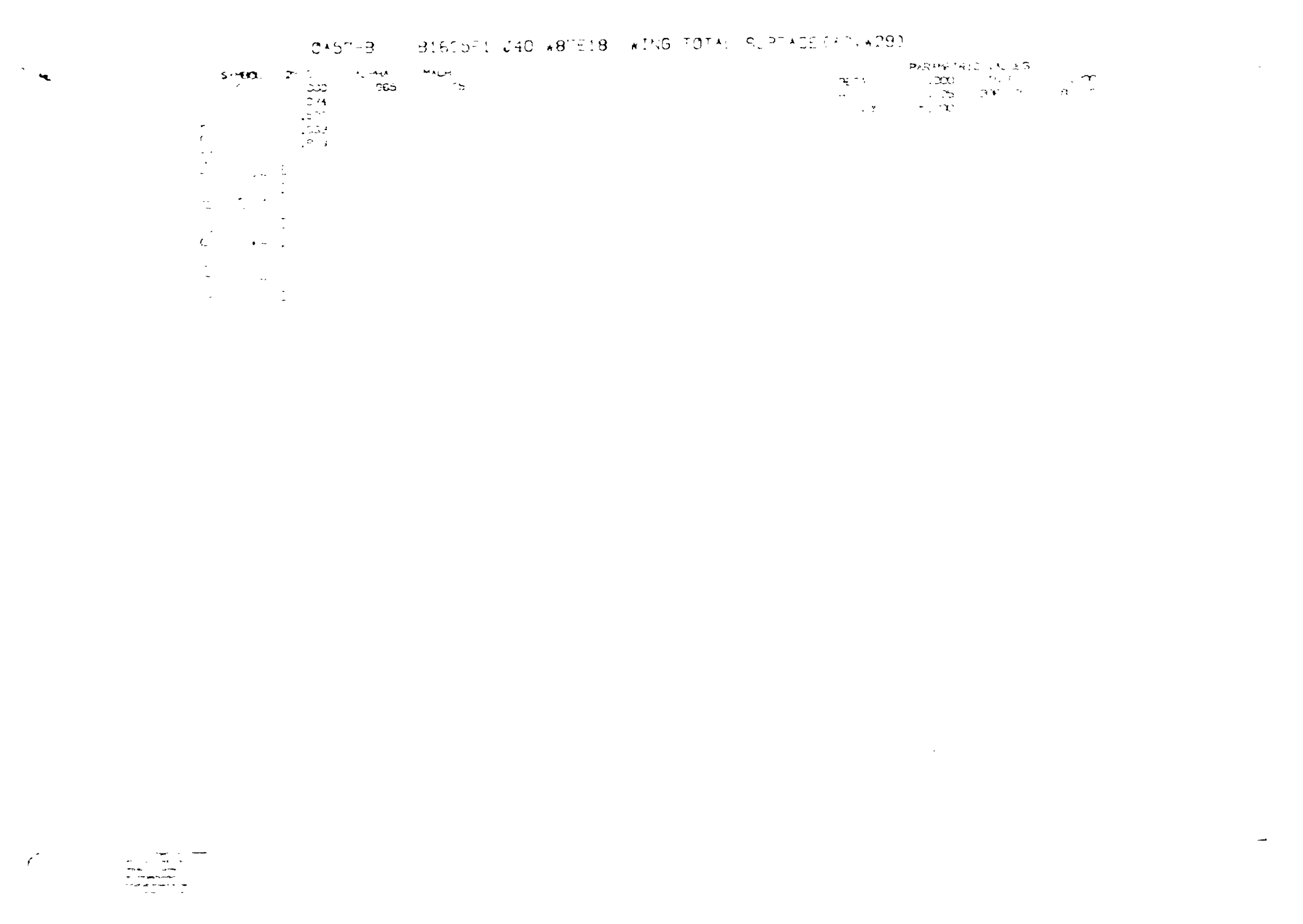


FIG 90 WING DIFFERENTIAL PRESSURE CHORDWISE DISTRIBUTION (MACH .165 PTN/P=1.300 ELEVON



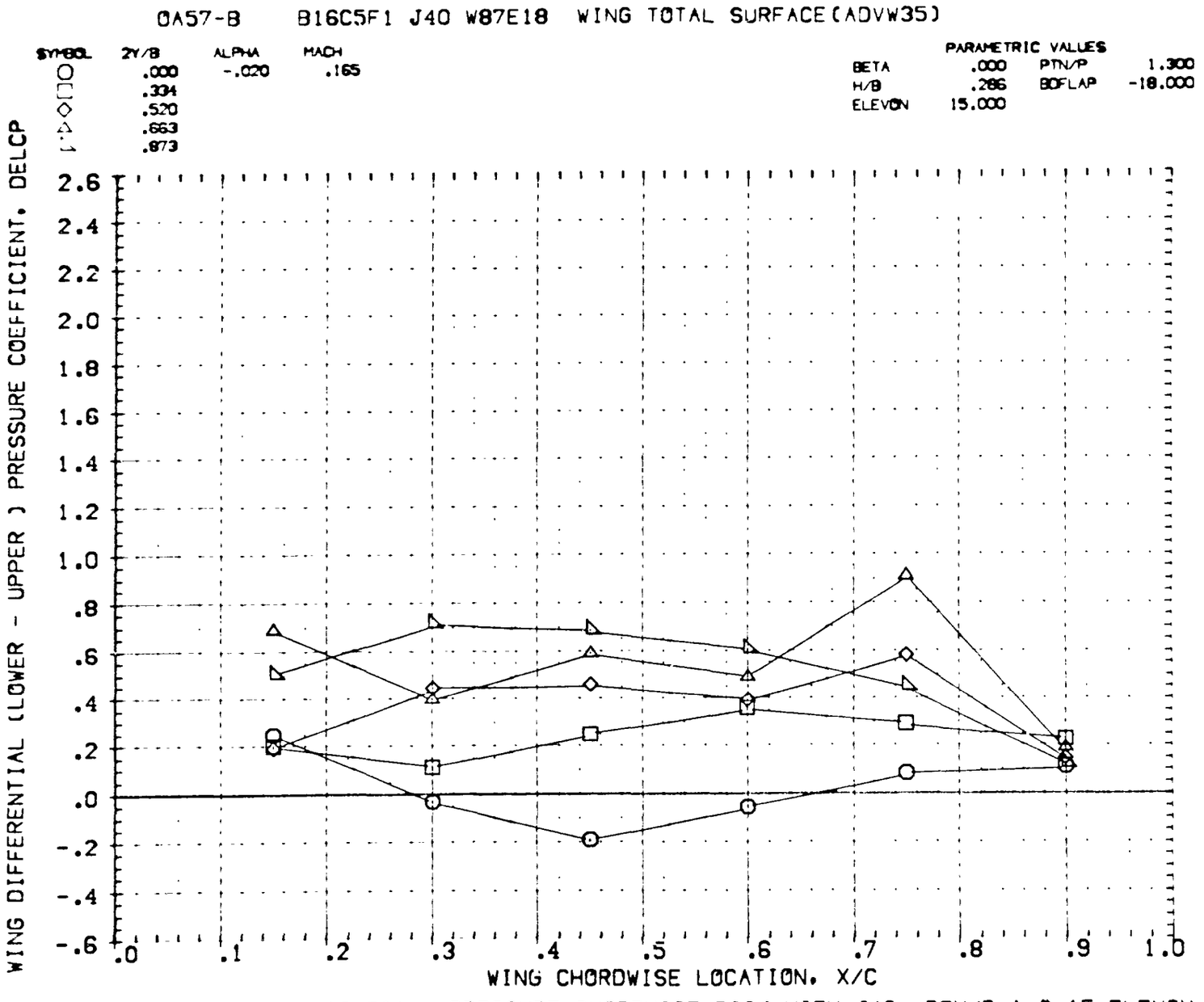


FIG 90 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

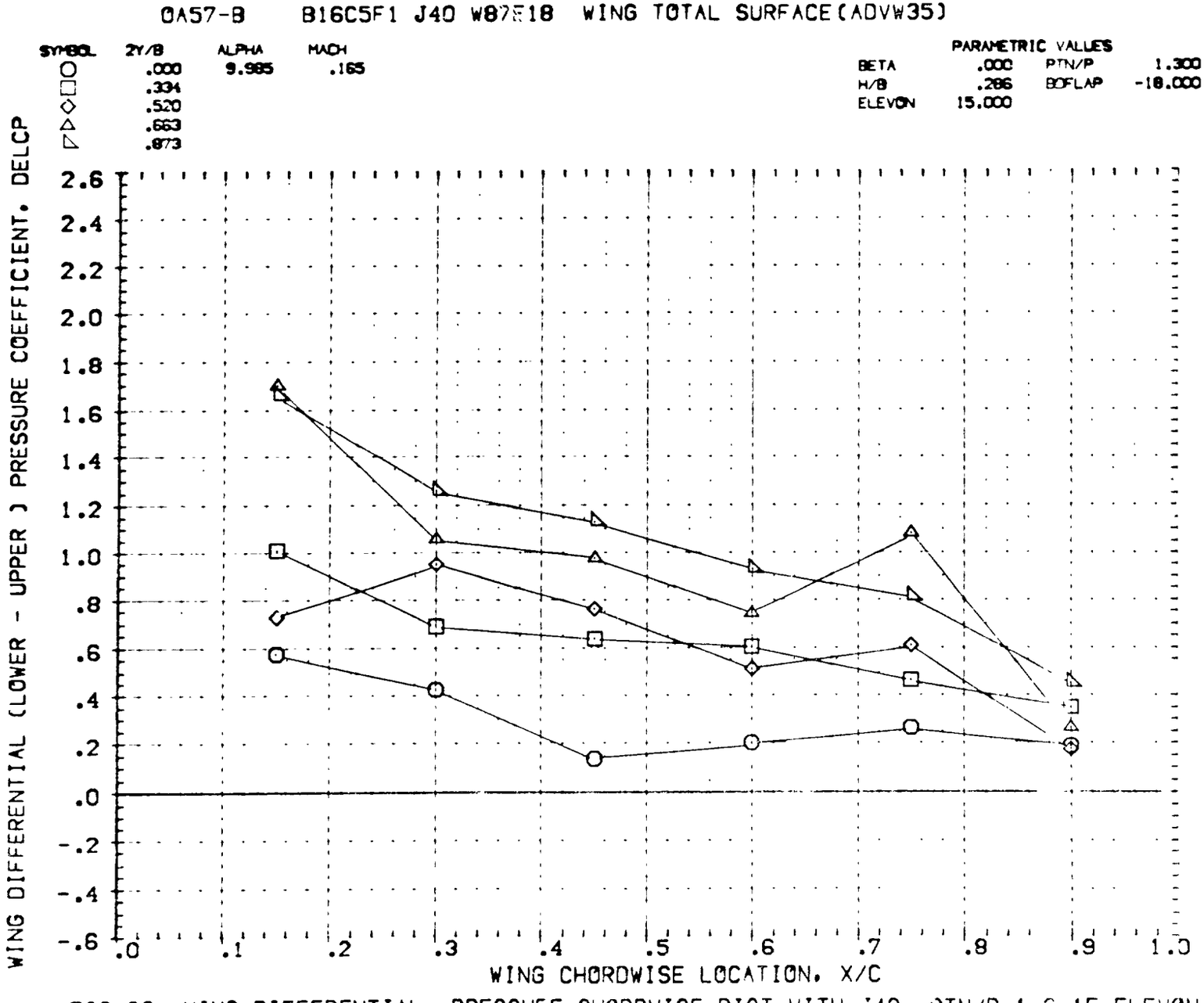


FIG 90 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.3,15 ELEVON

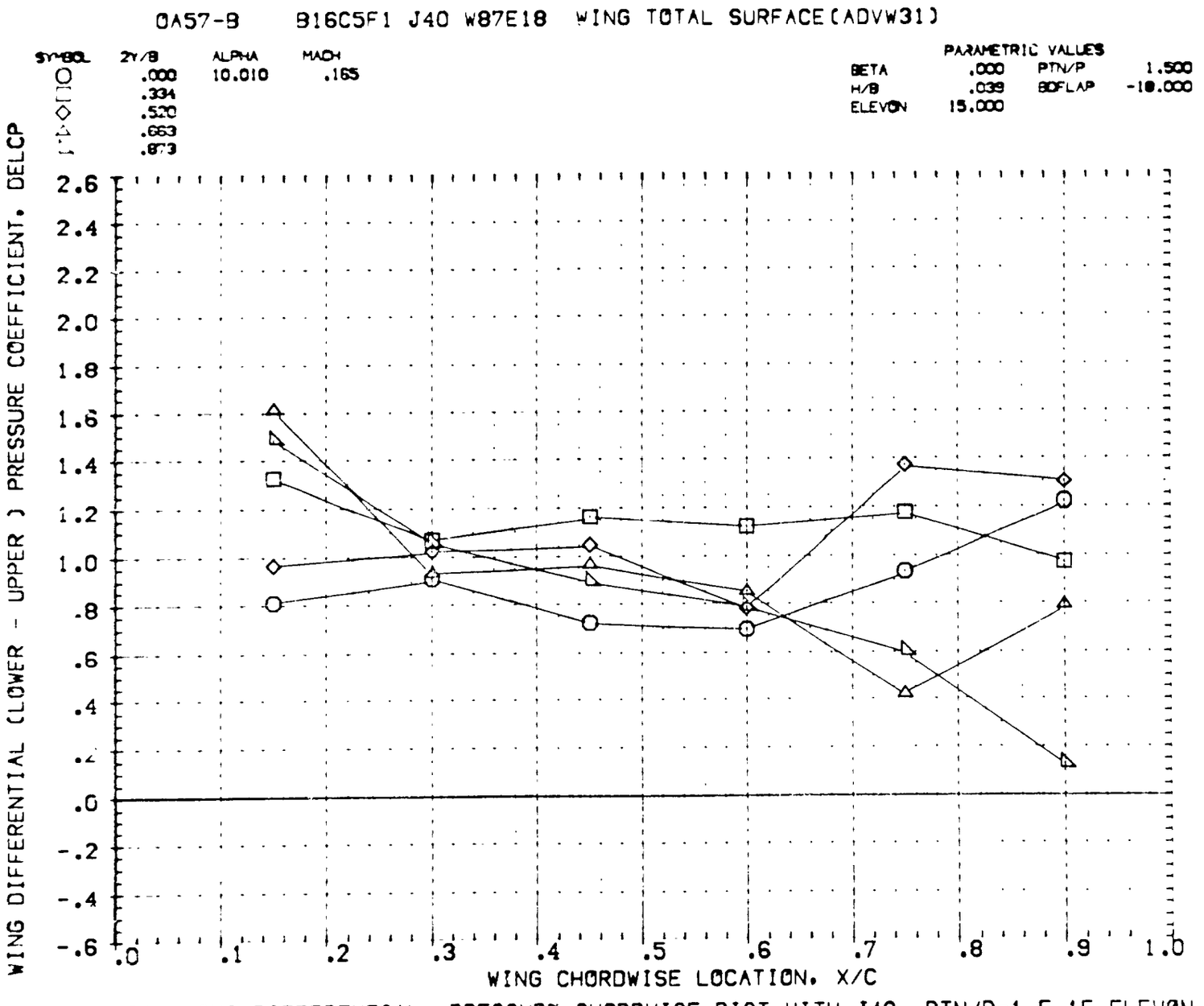


FIG 91 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

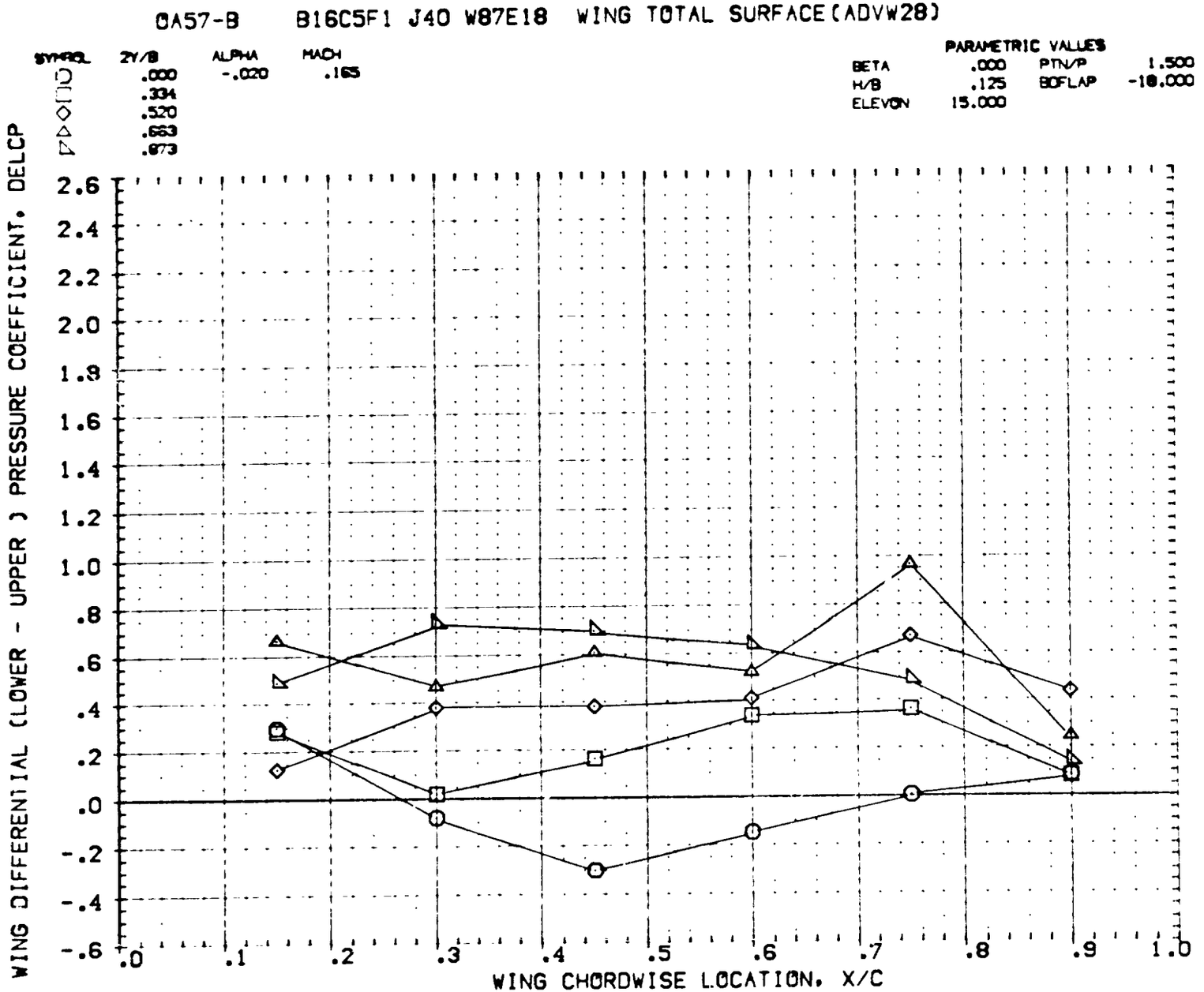


FIG 91 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

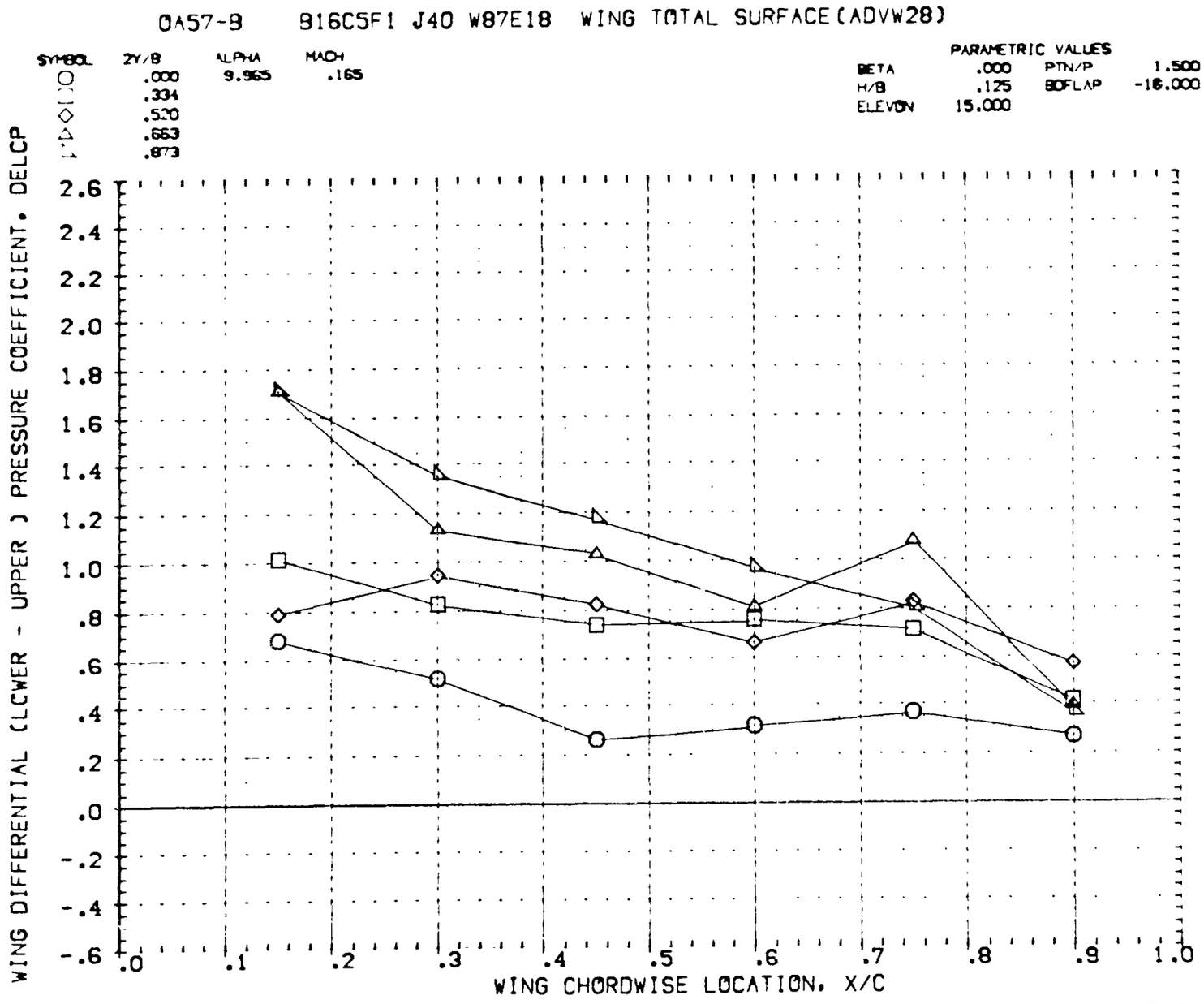


FIG 91 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

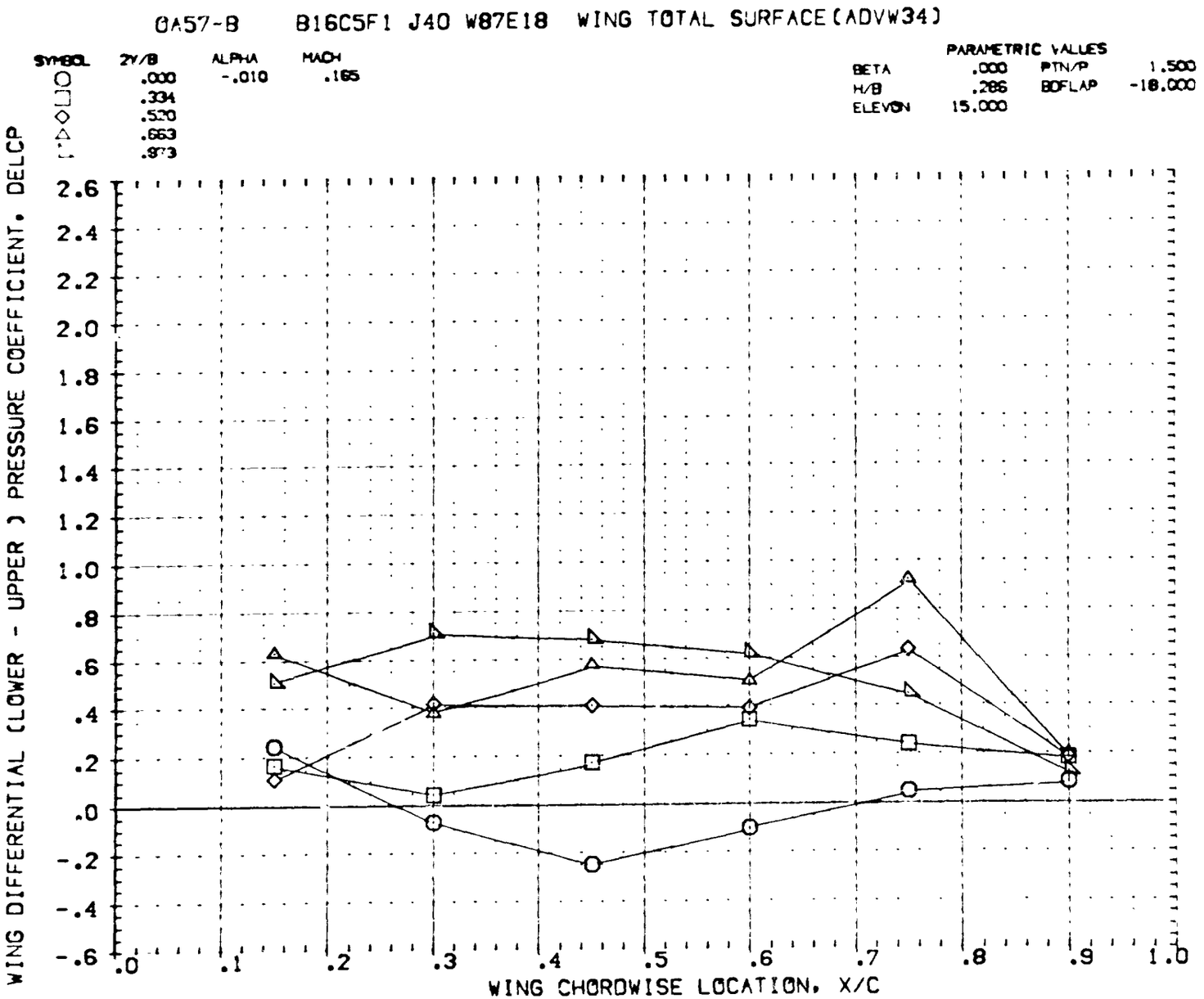


FIG 91 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

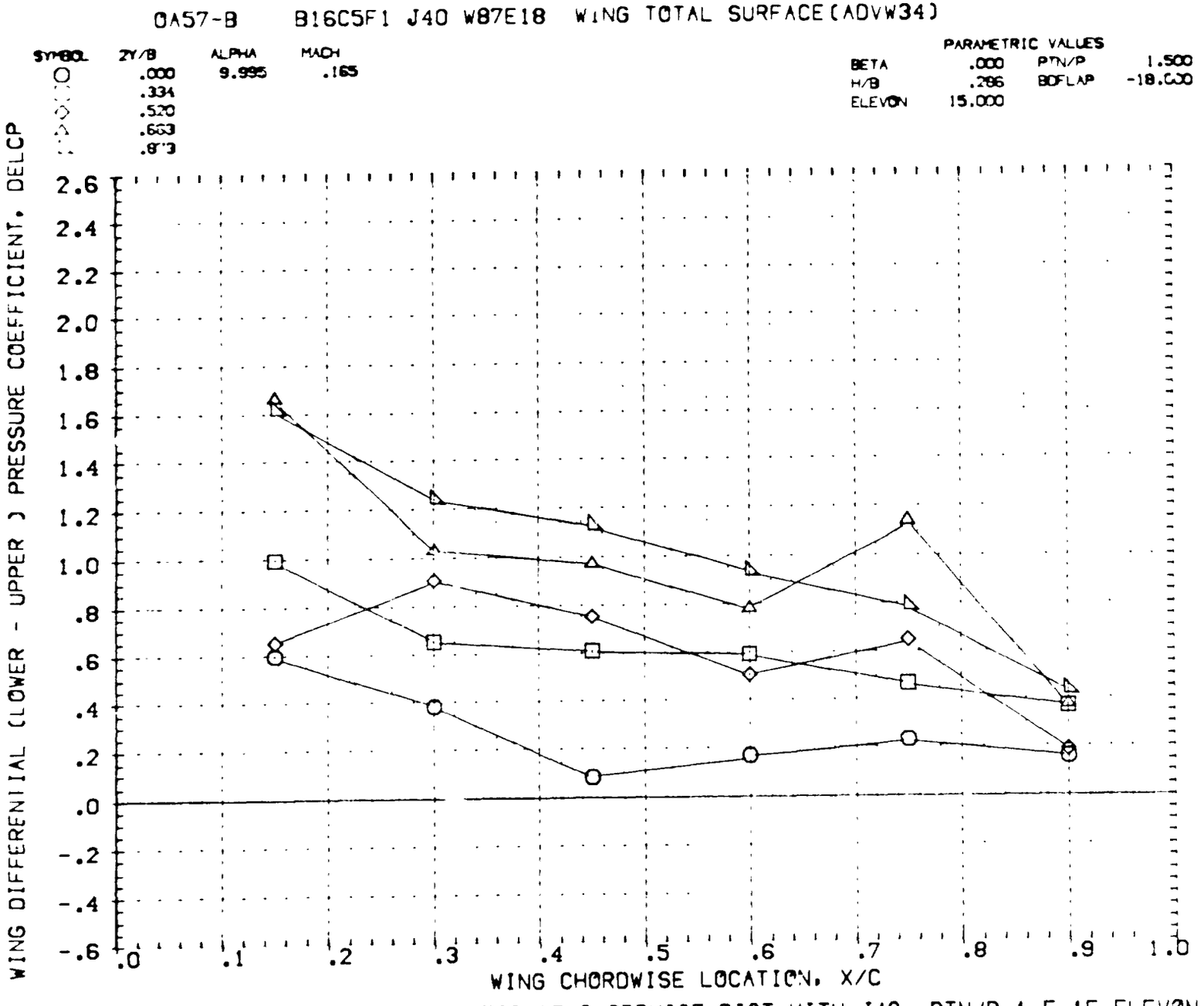


FIG 91 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J40, PTN/P=1.5,15 ELEVON

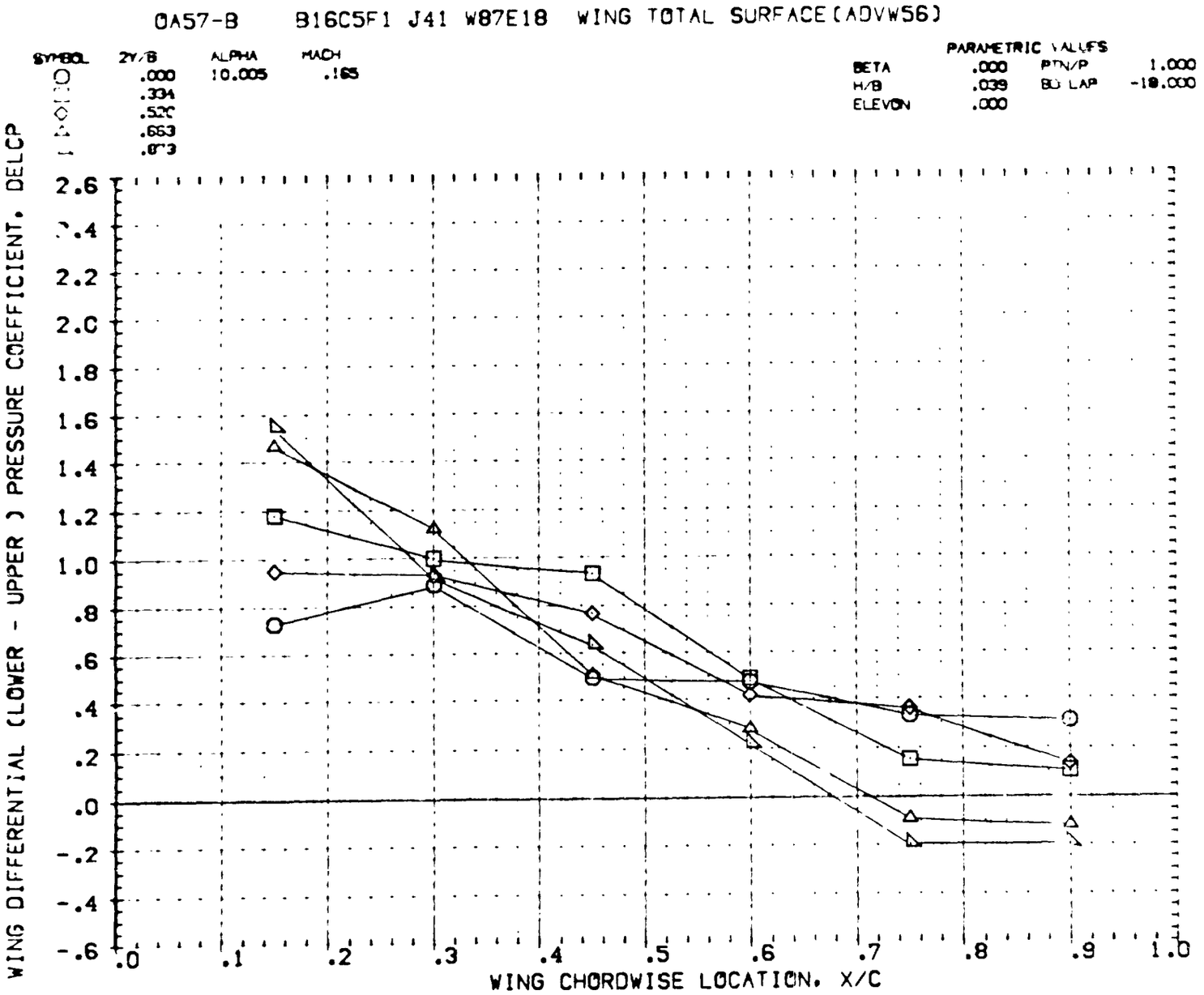


FIG 92 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

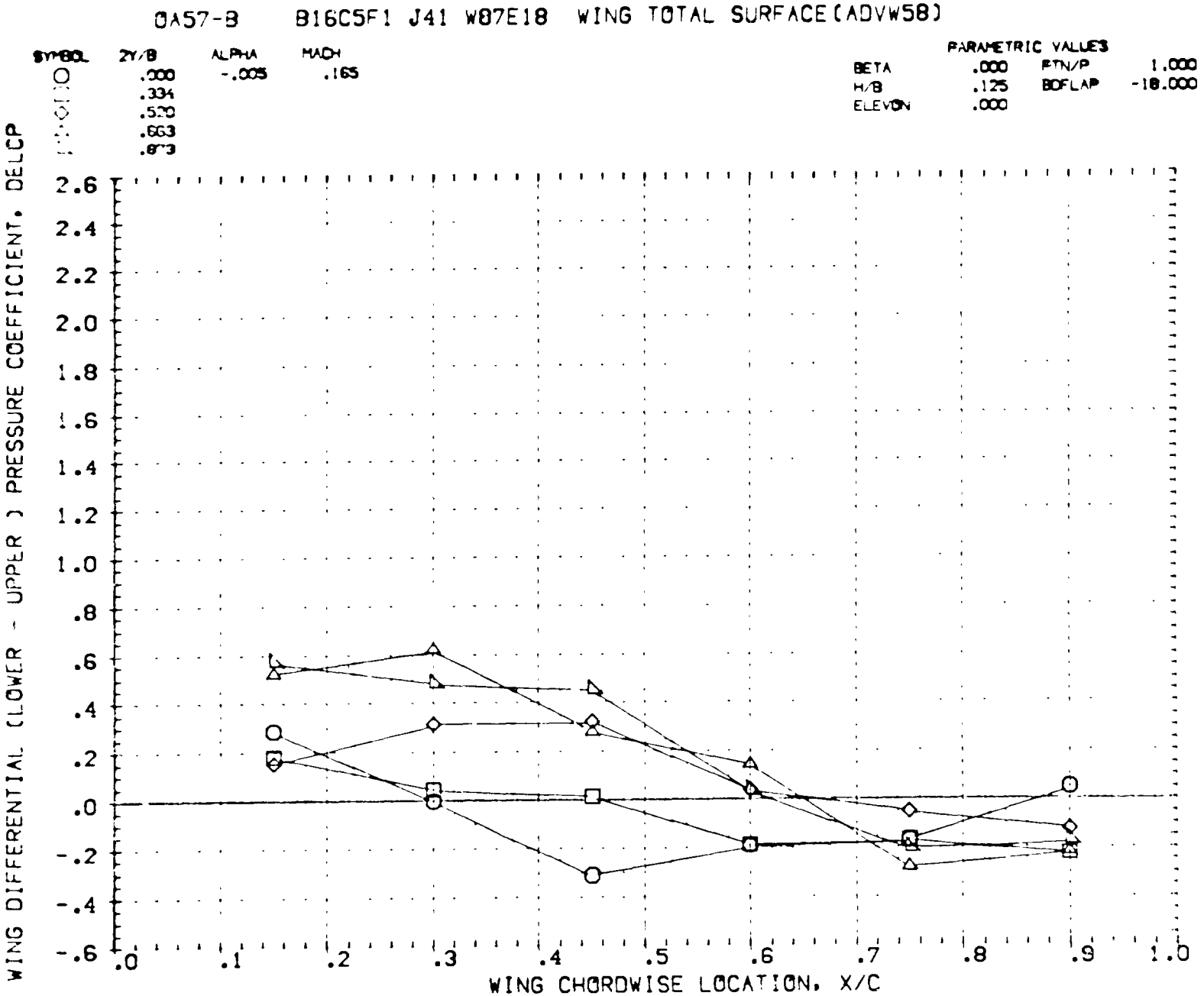


FIG 92 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

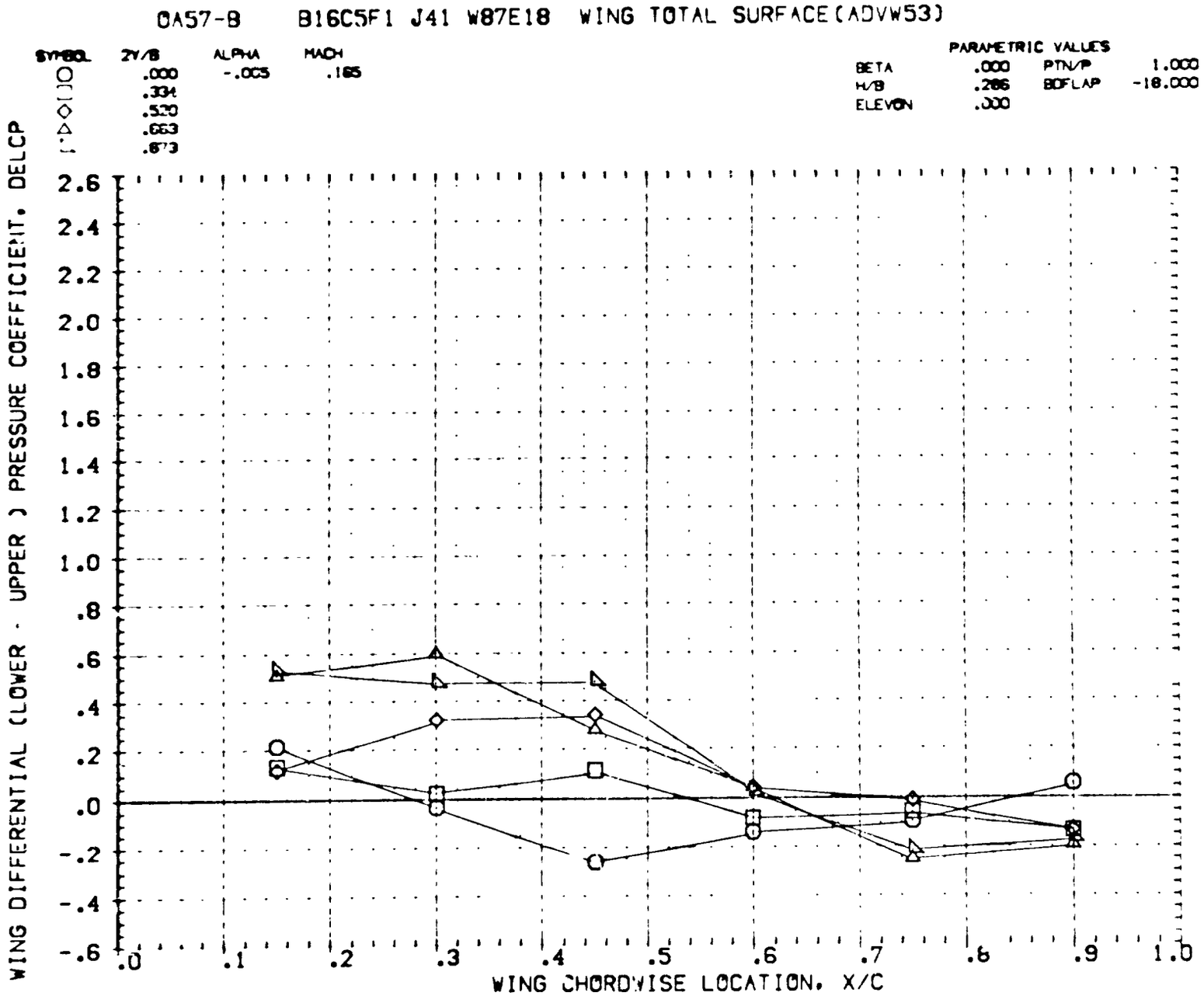


FIG 92 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

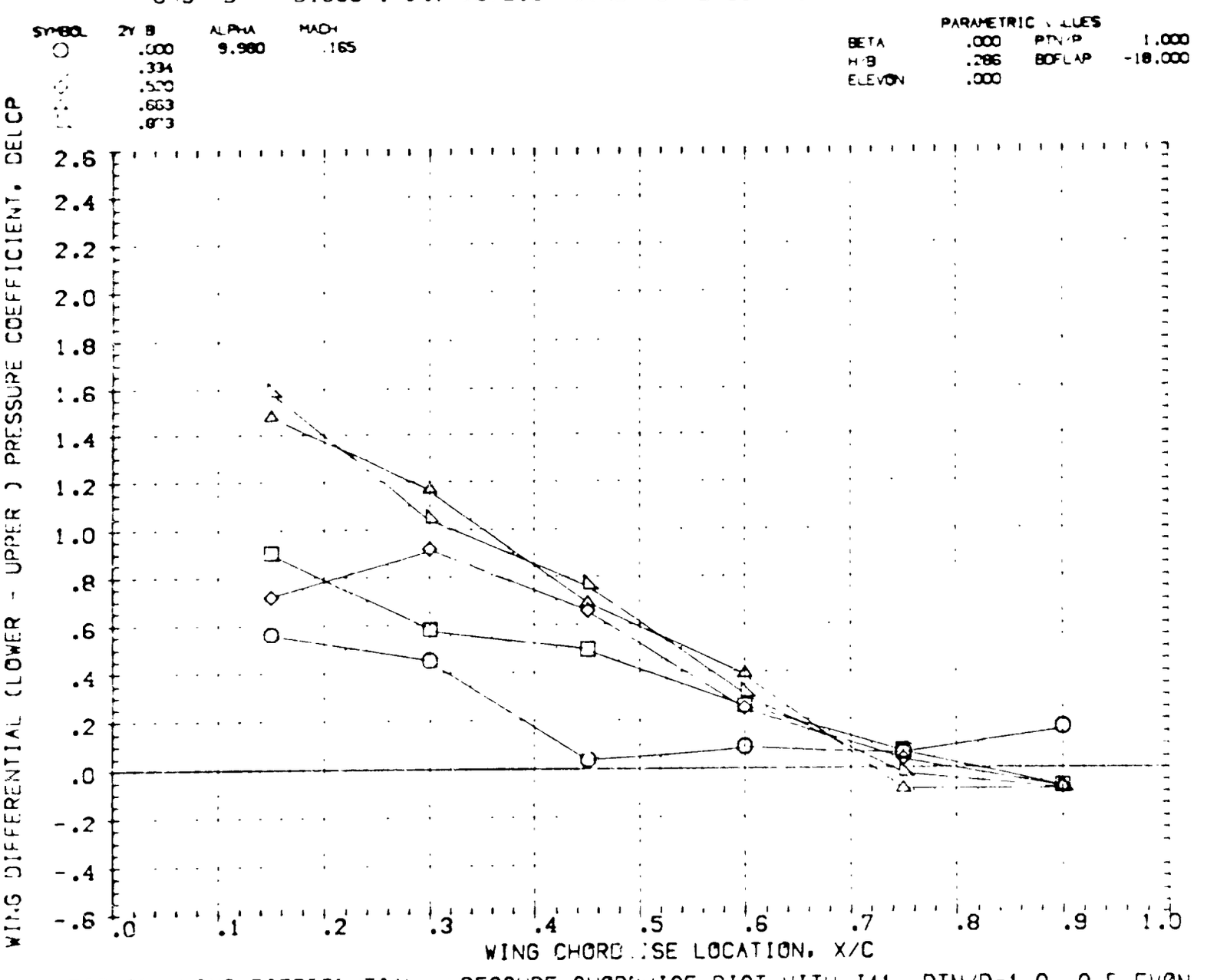


FIG 92 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.0, 0 ELEVON

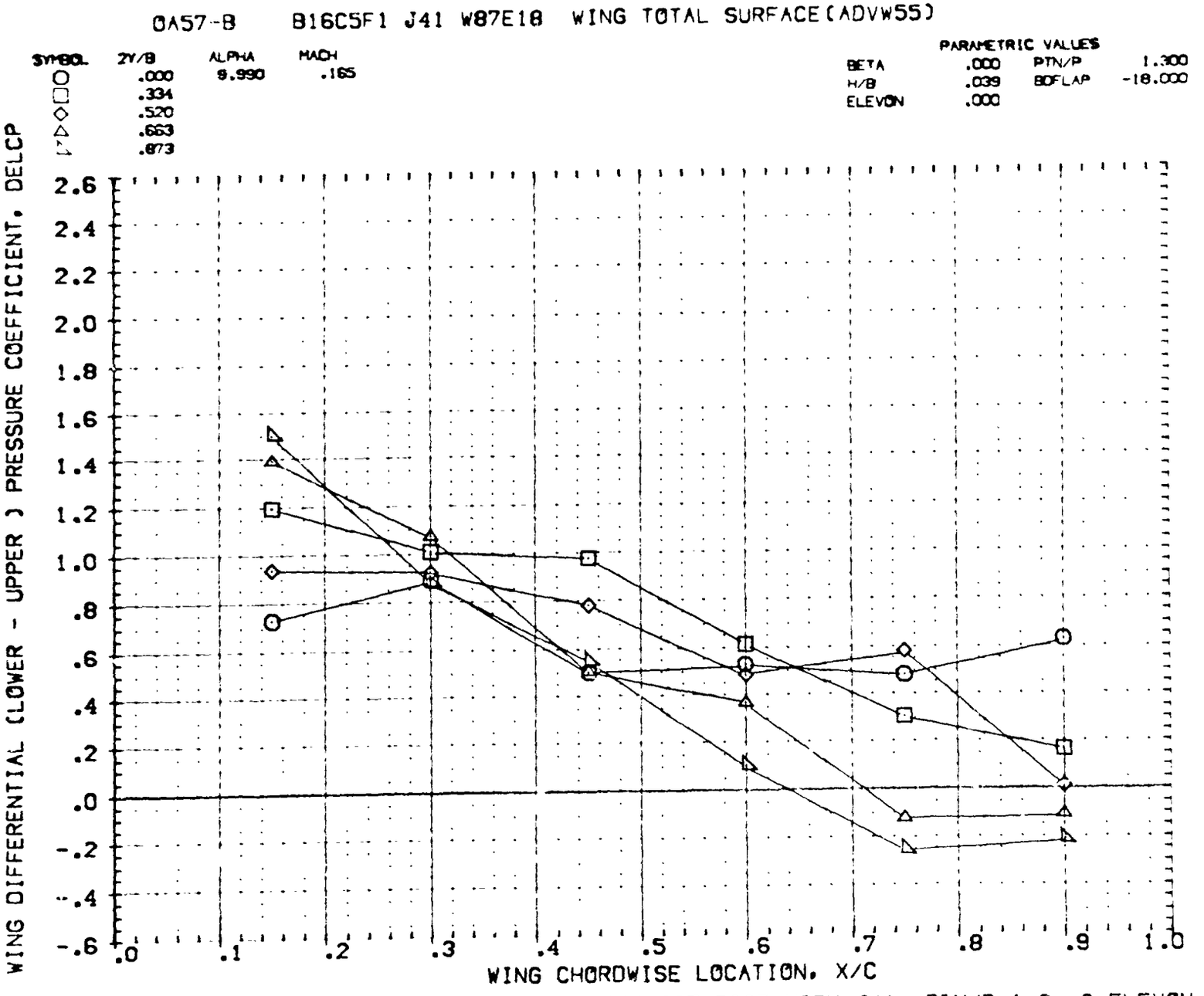


FIG 93 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

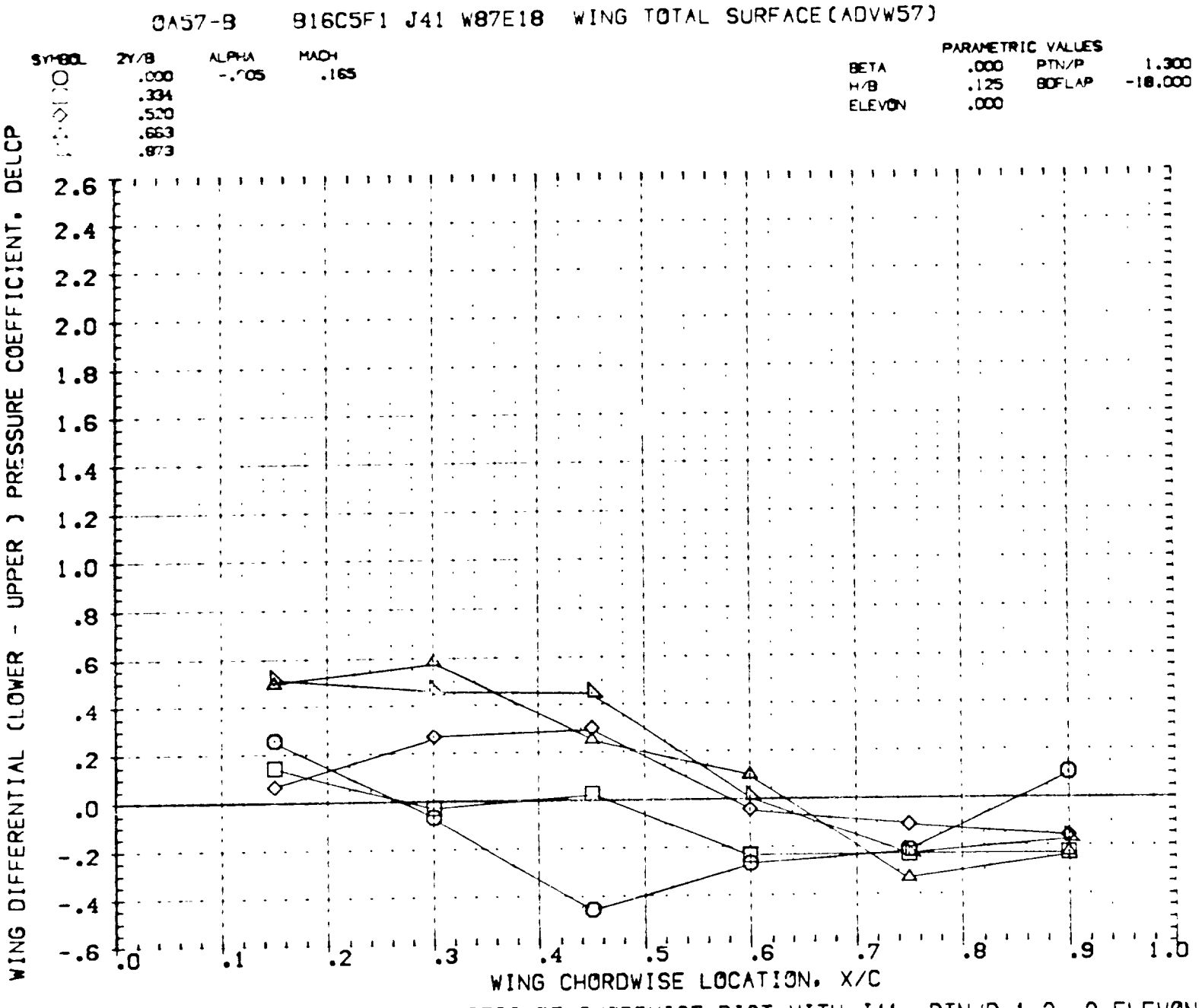


FIG 93 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

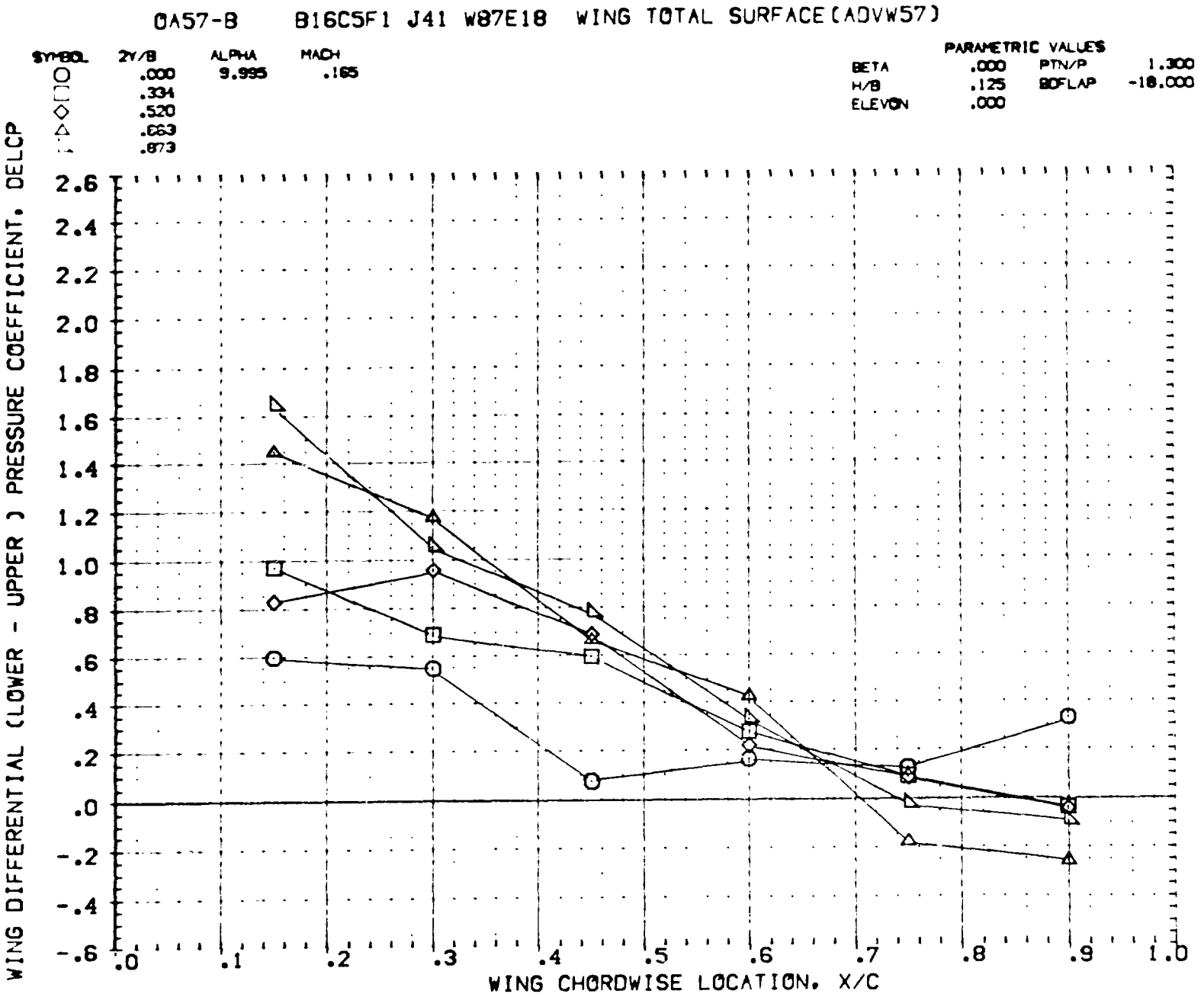


FIG 93 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

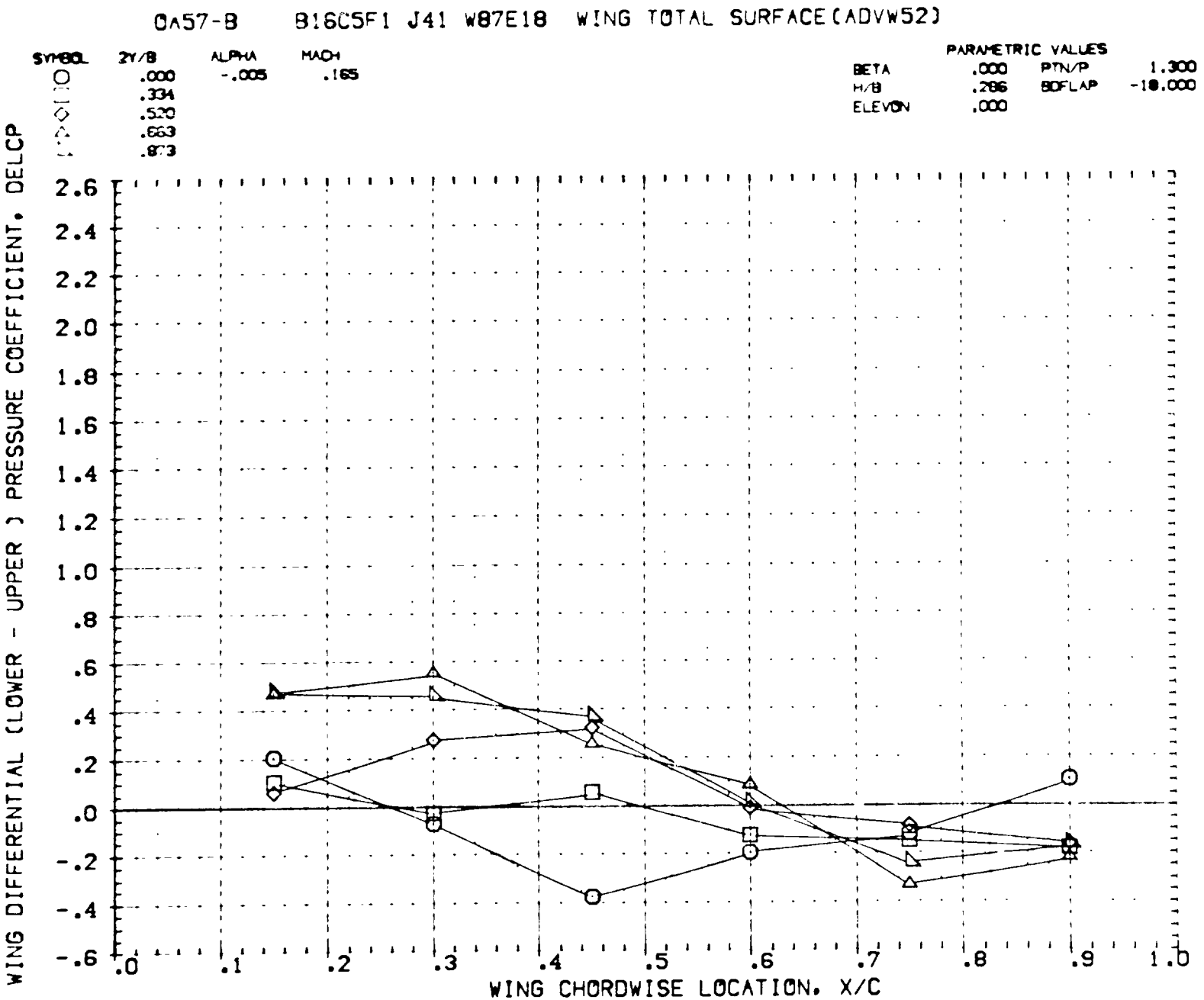


FIG 93 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

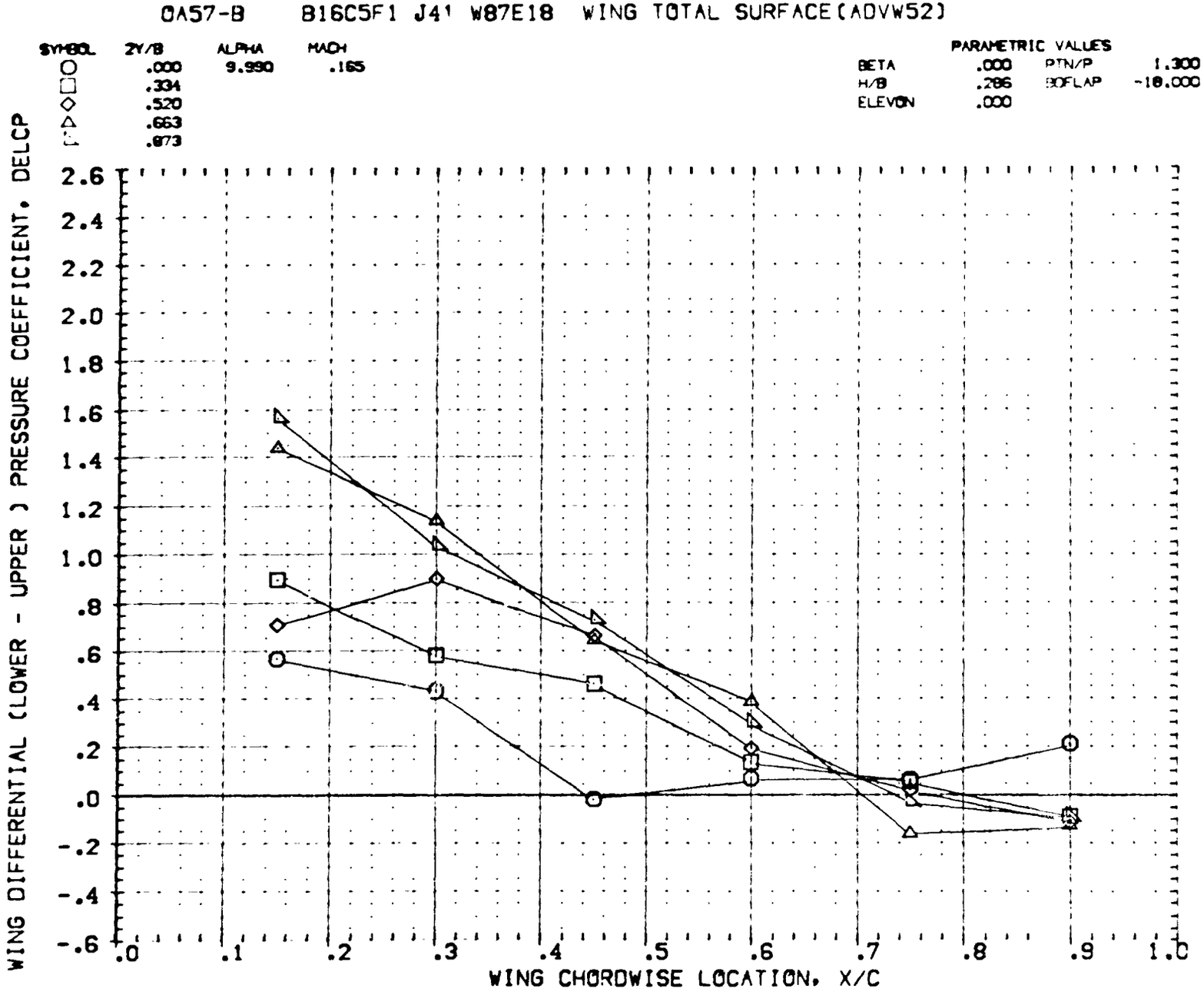


FIG 93 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J41, PTN/P=1.3, 0 ELEVON

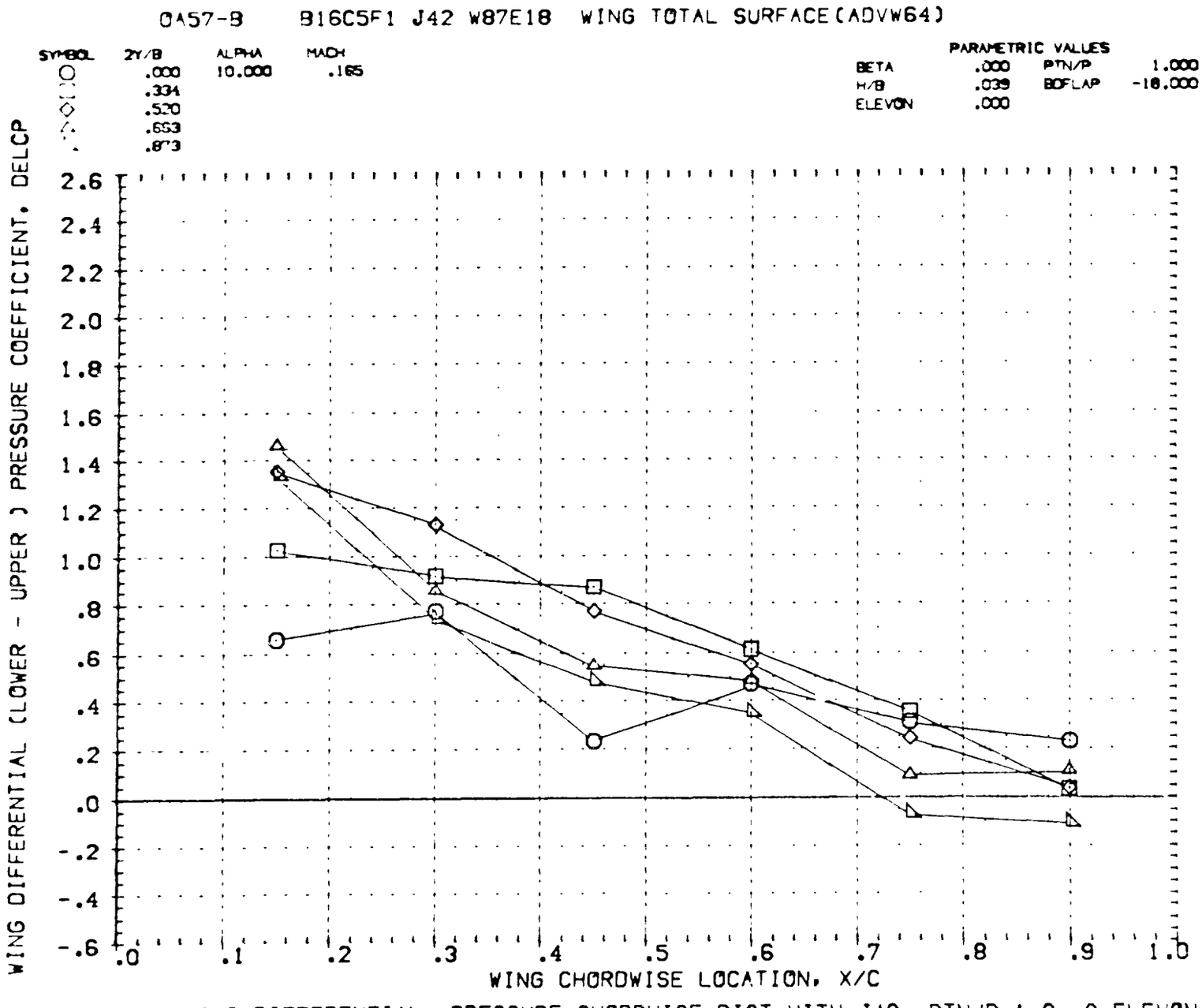


FIG 94 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

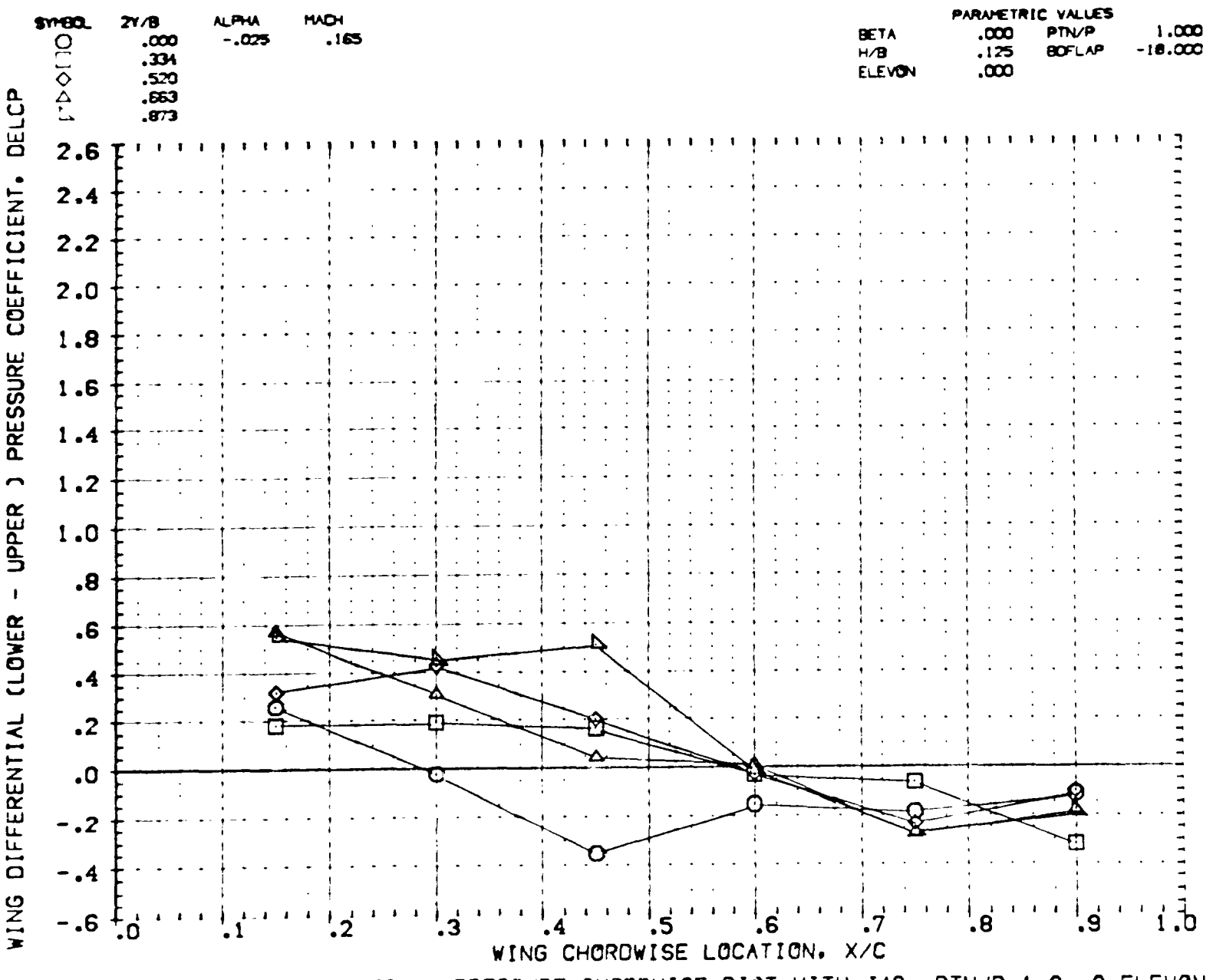


FIG 94 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

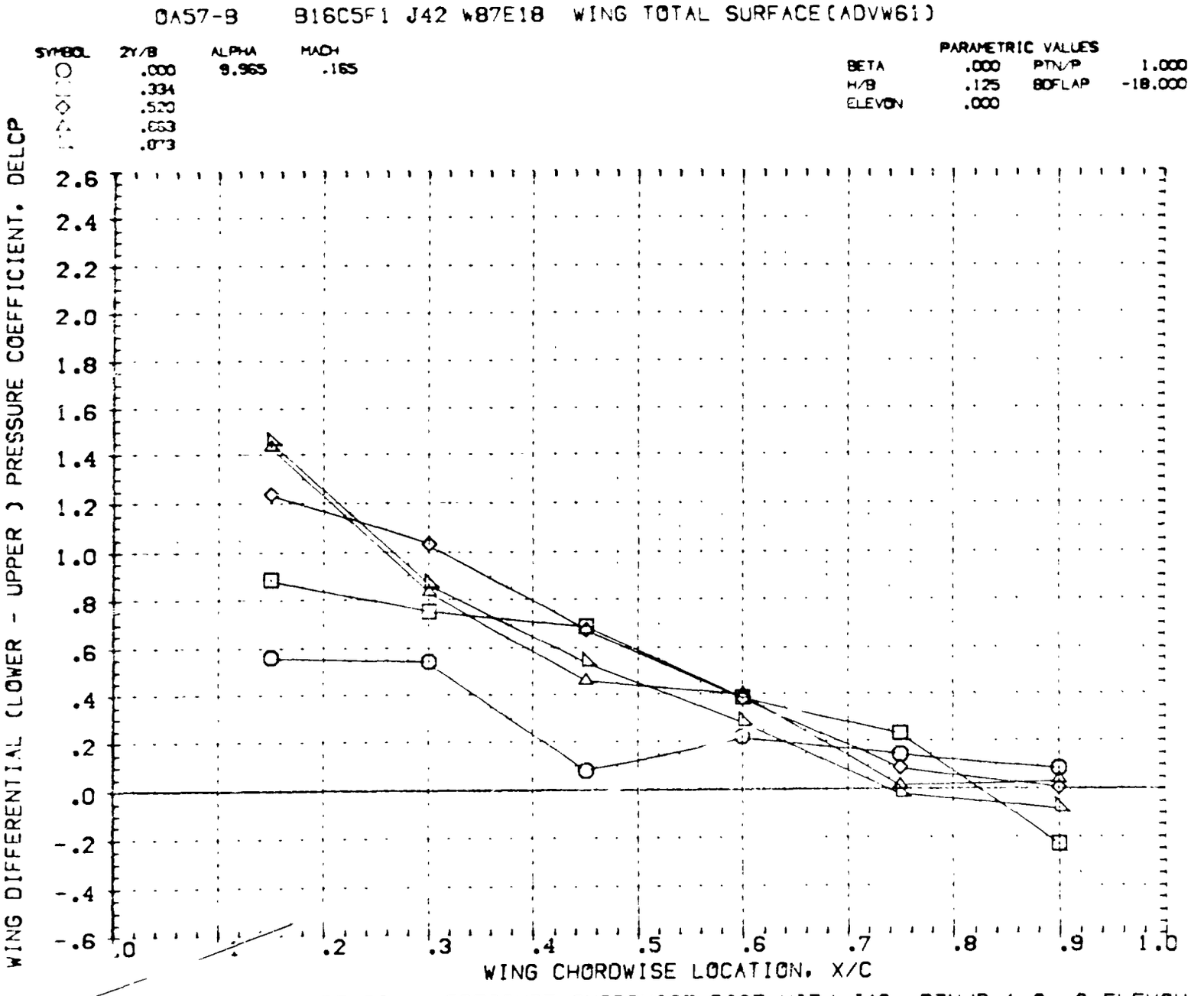


FIG 94 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

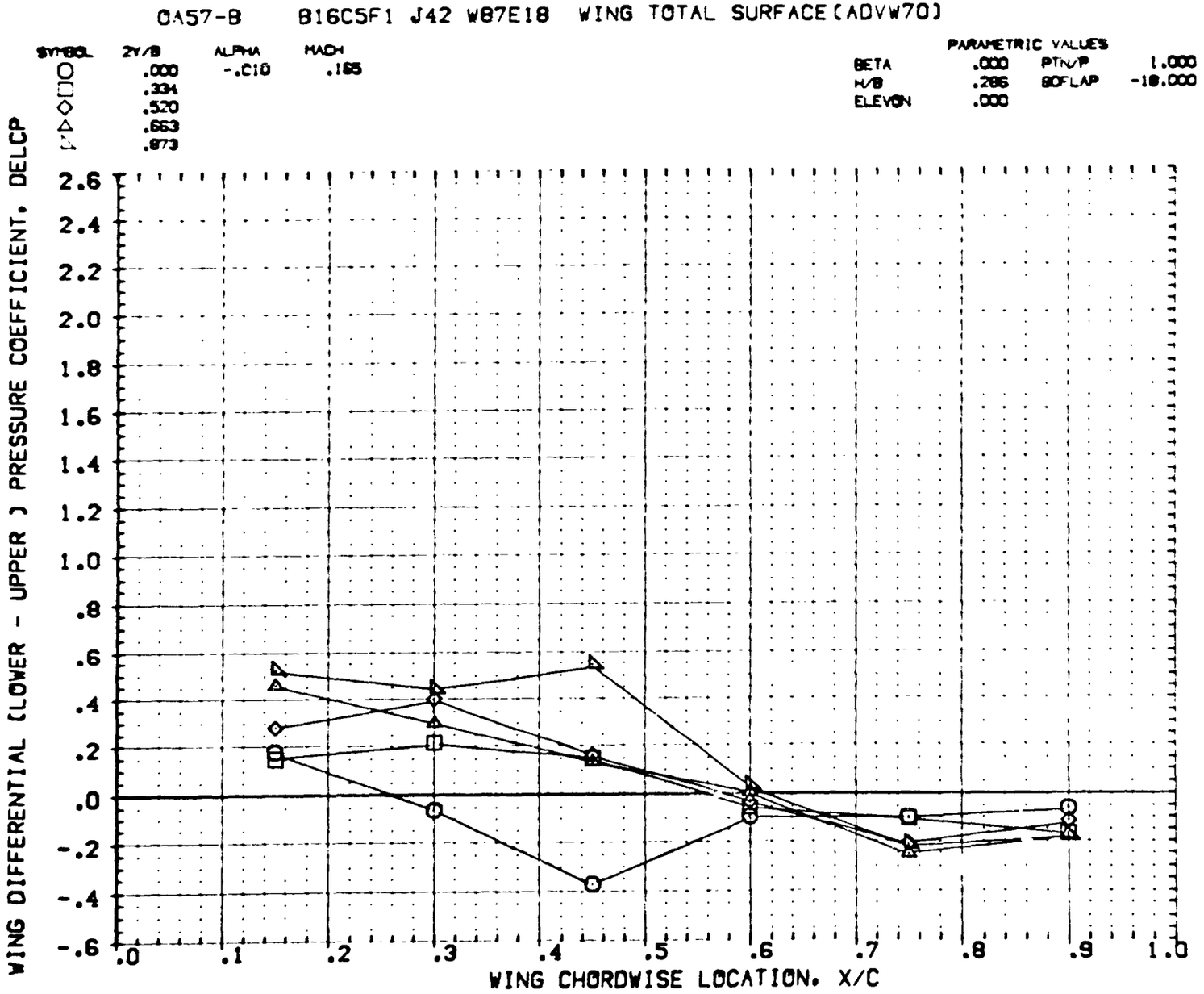


FIG 94 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

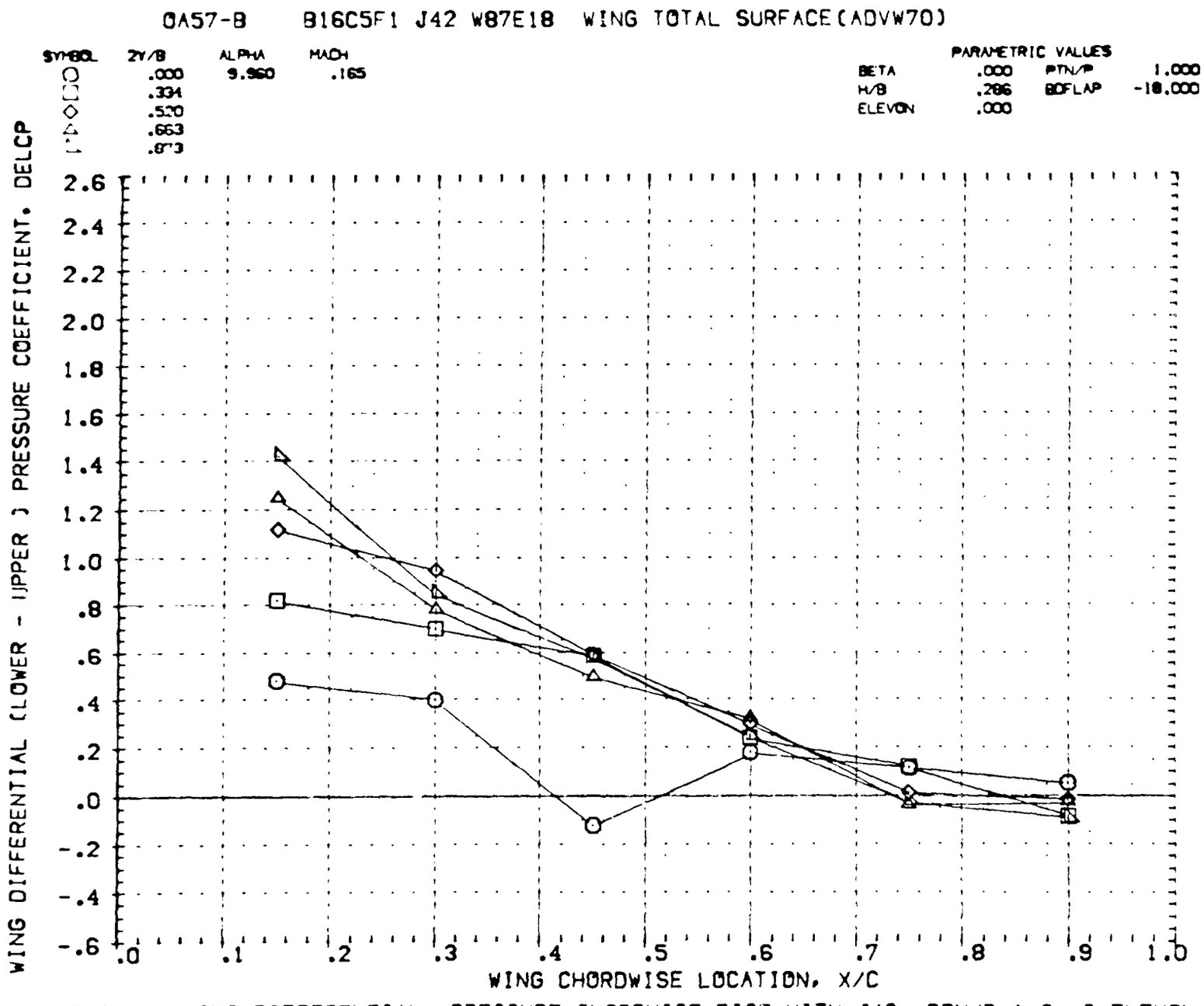


FIG 94 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.0, 0 ELEVON

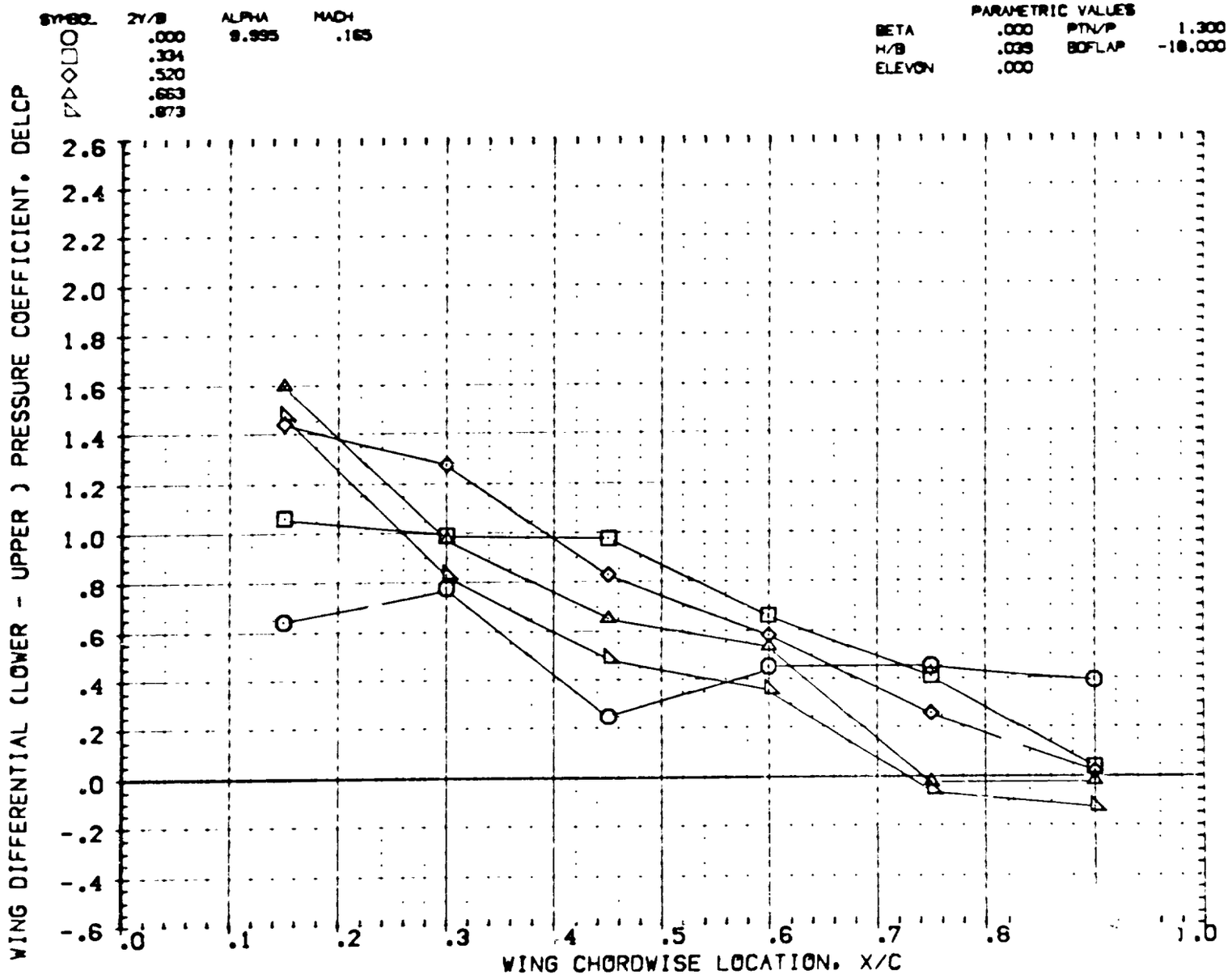


FIG 95 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/ ELEVON

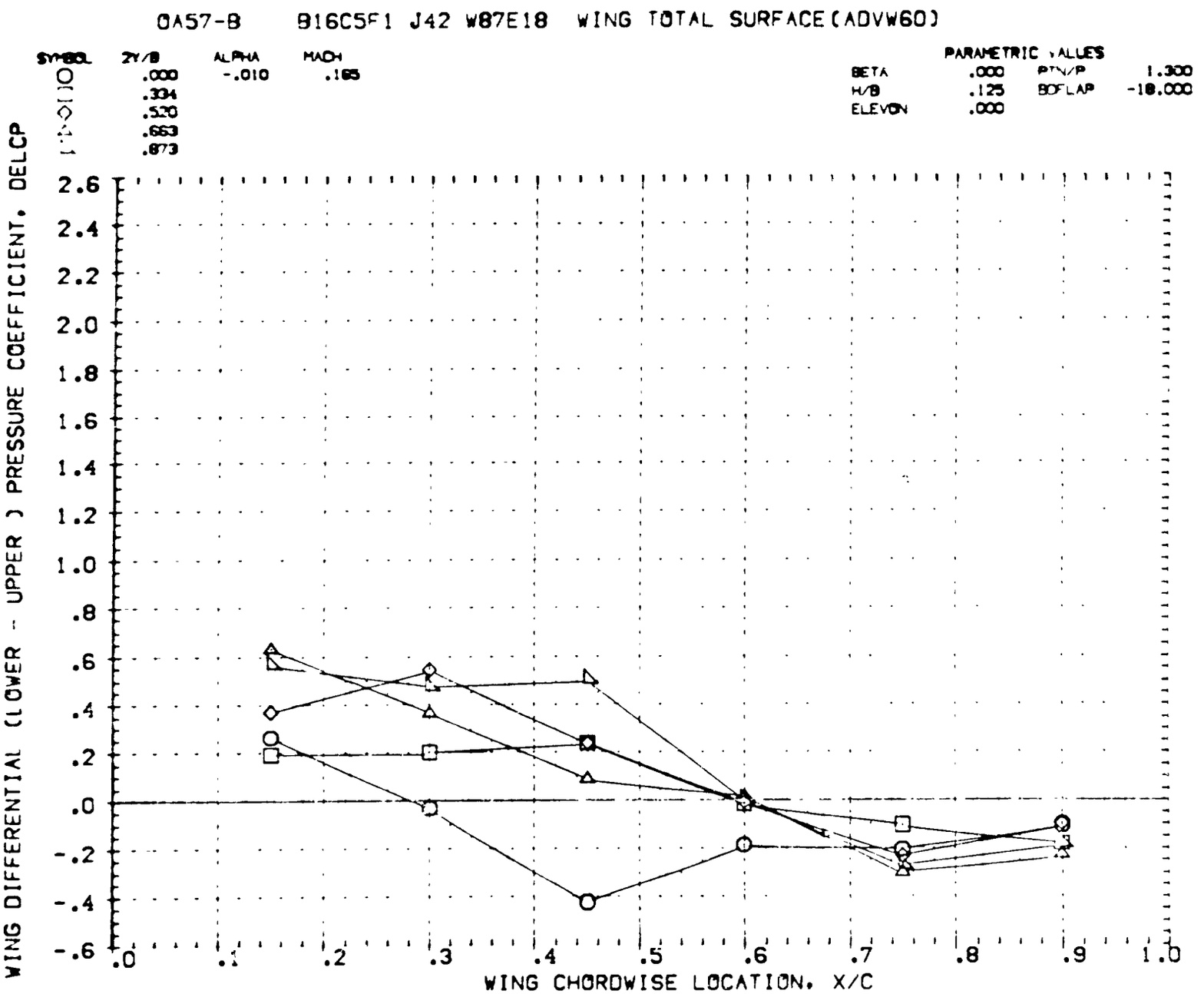


FIG 95 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

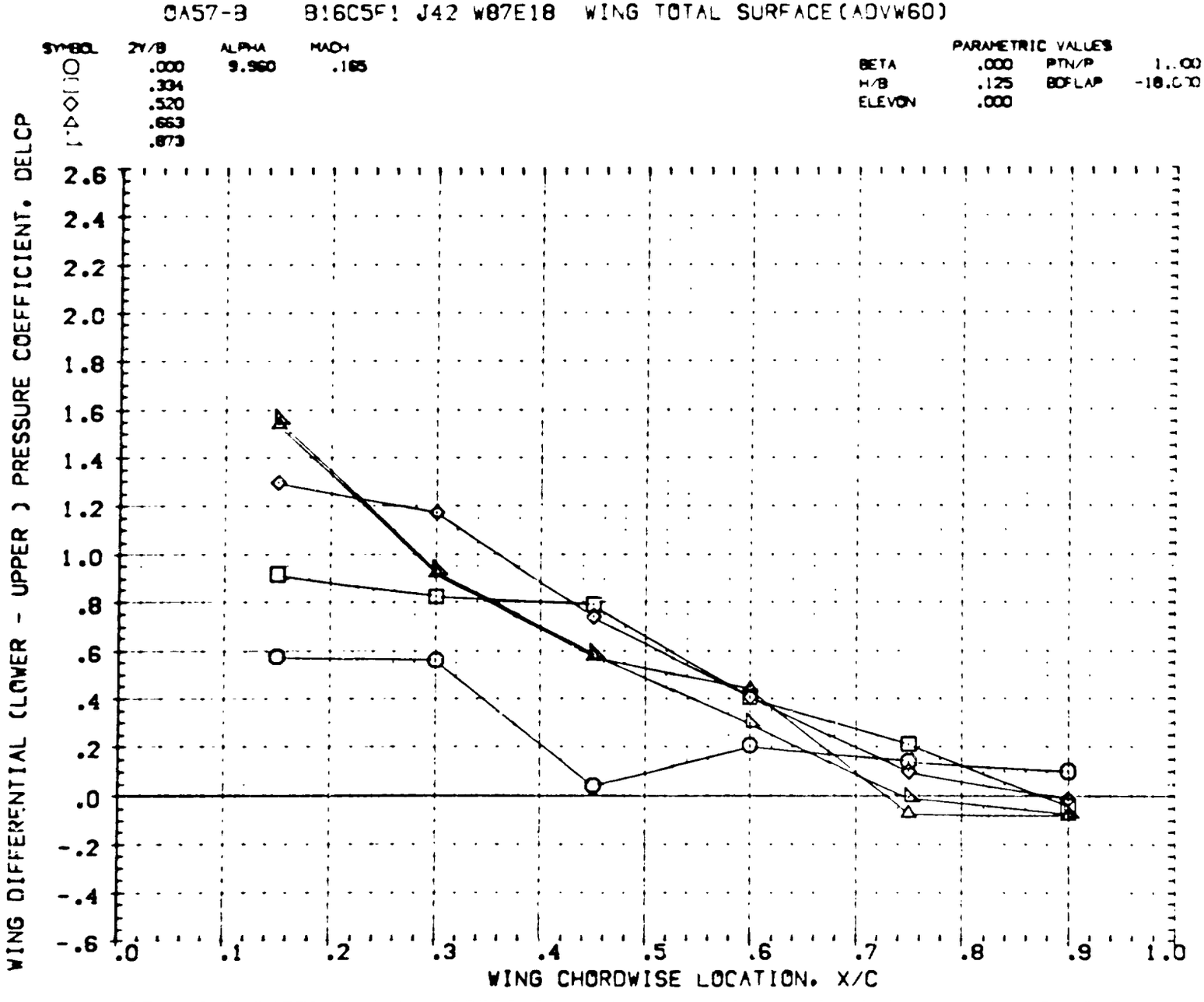


FIG 95 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

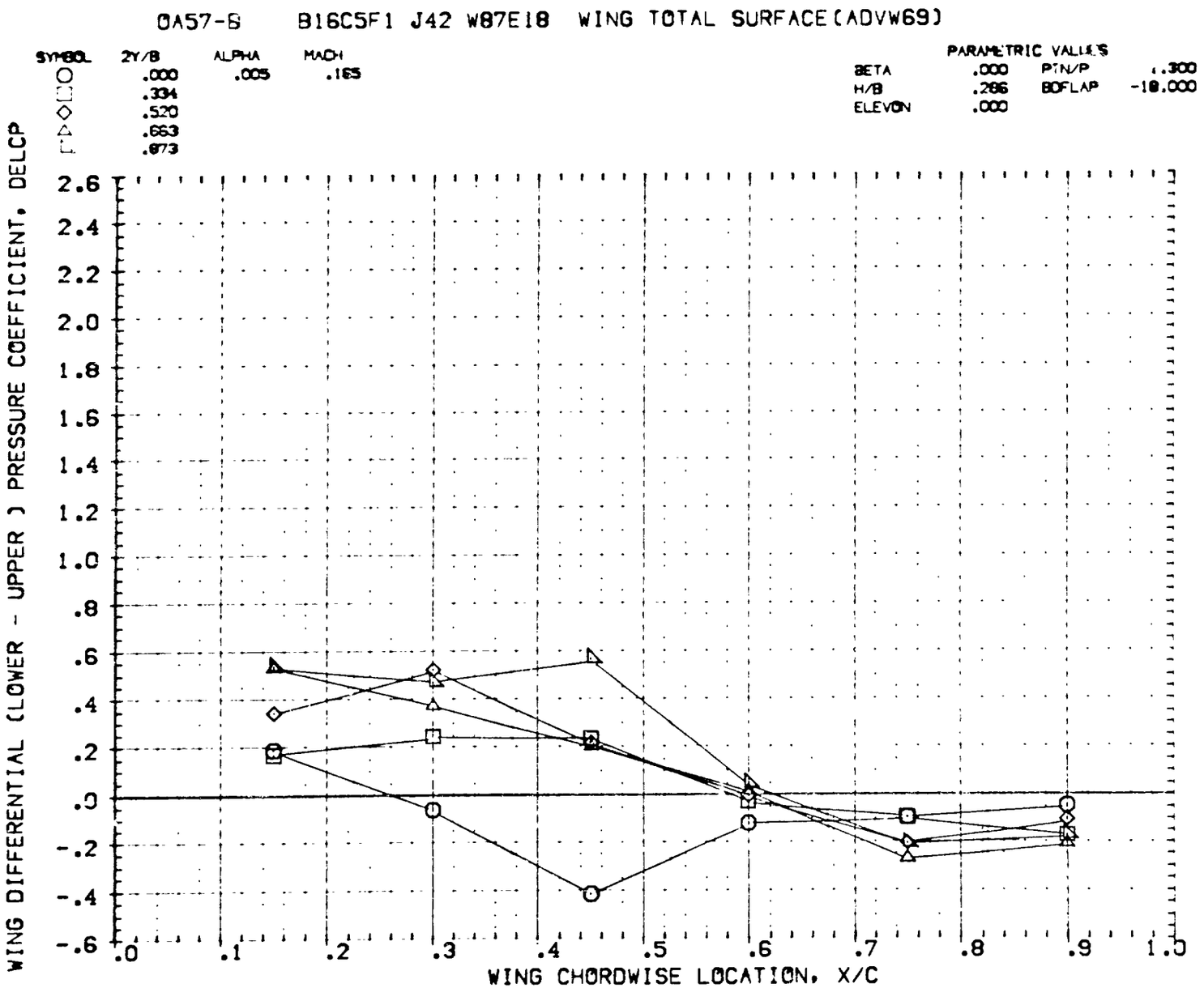


FIG 95 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

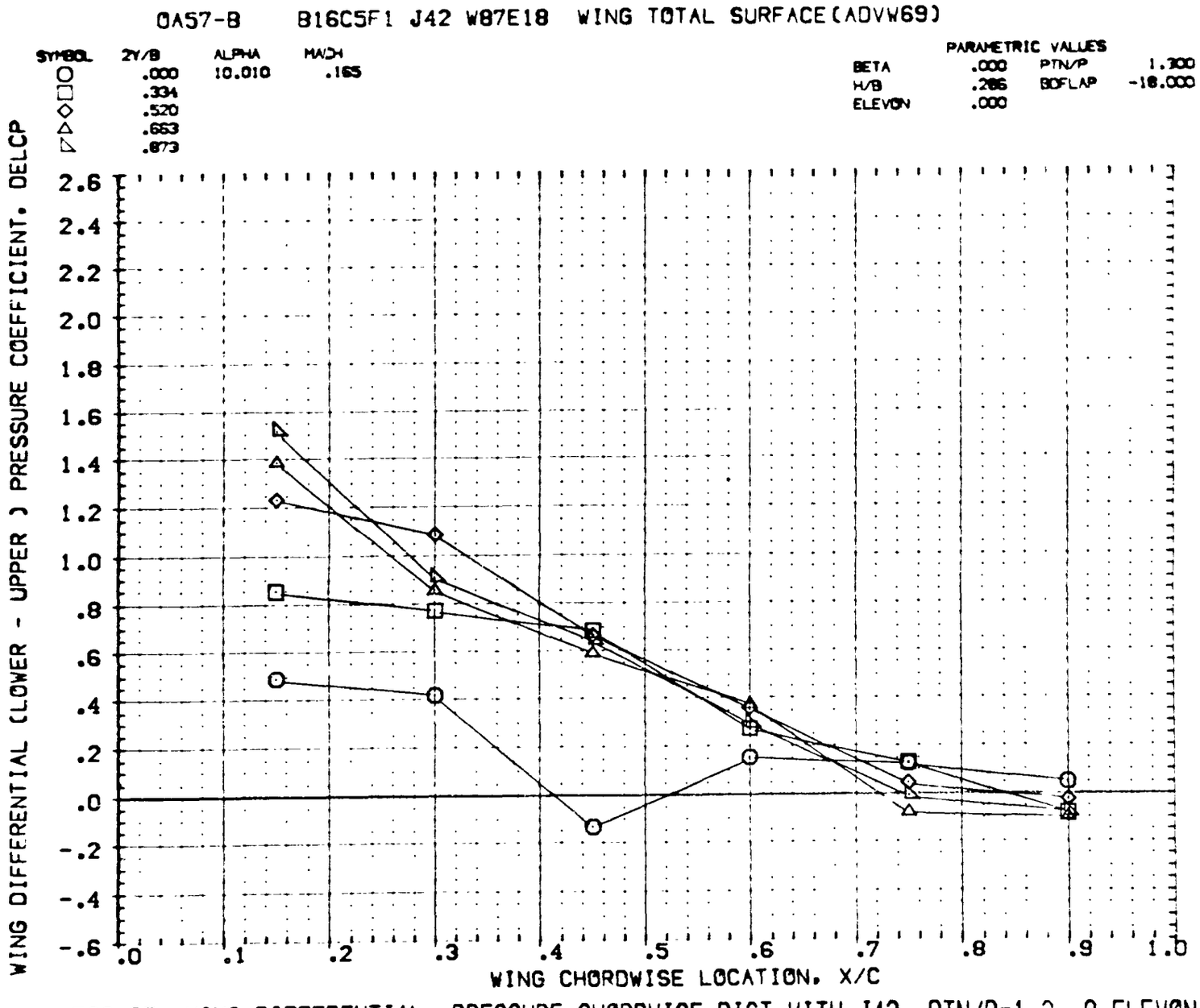


FIG 95 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.3, 0 ELEVON

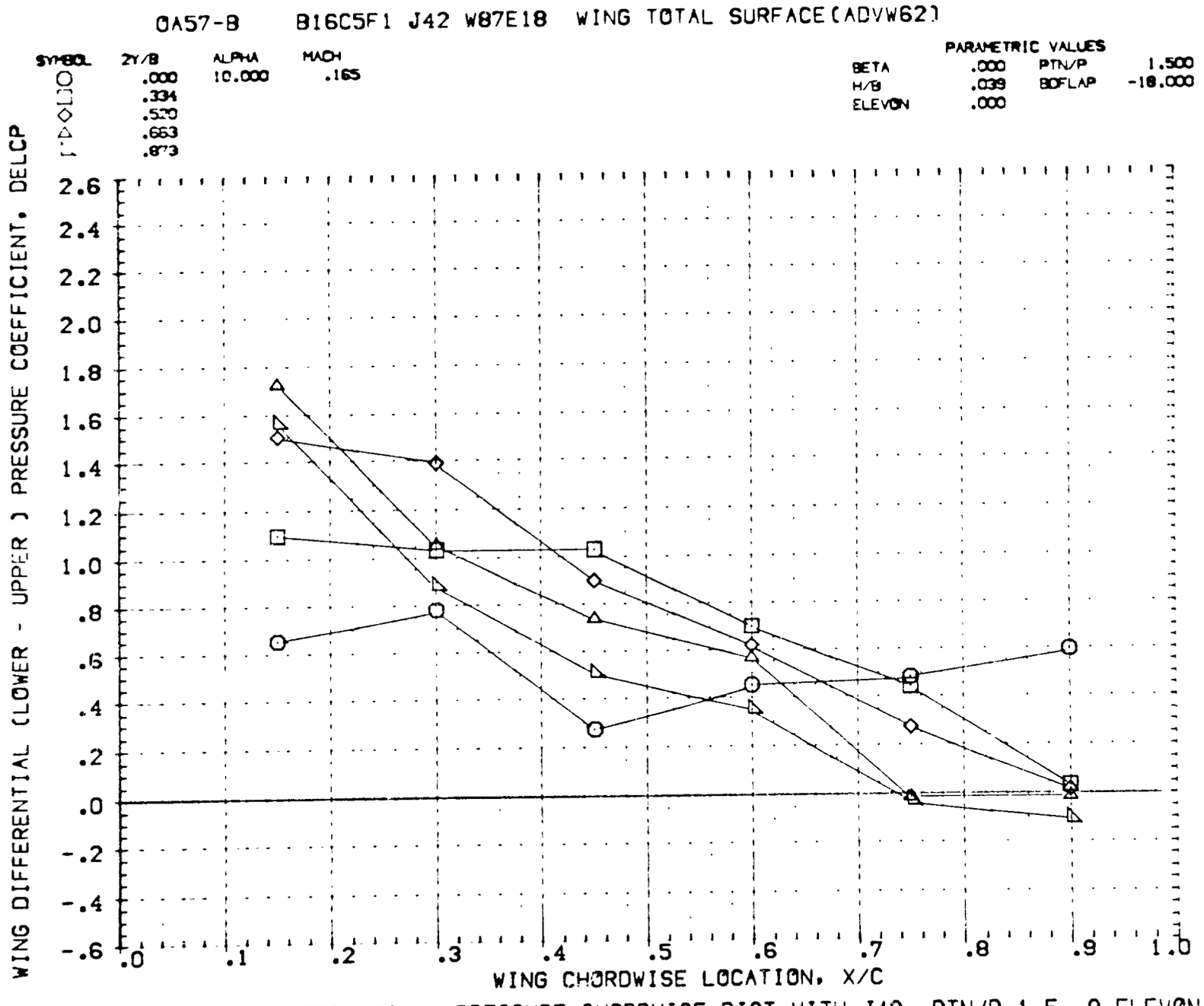


FIG 96 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

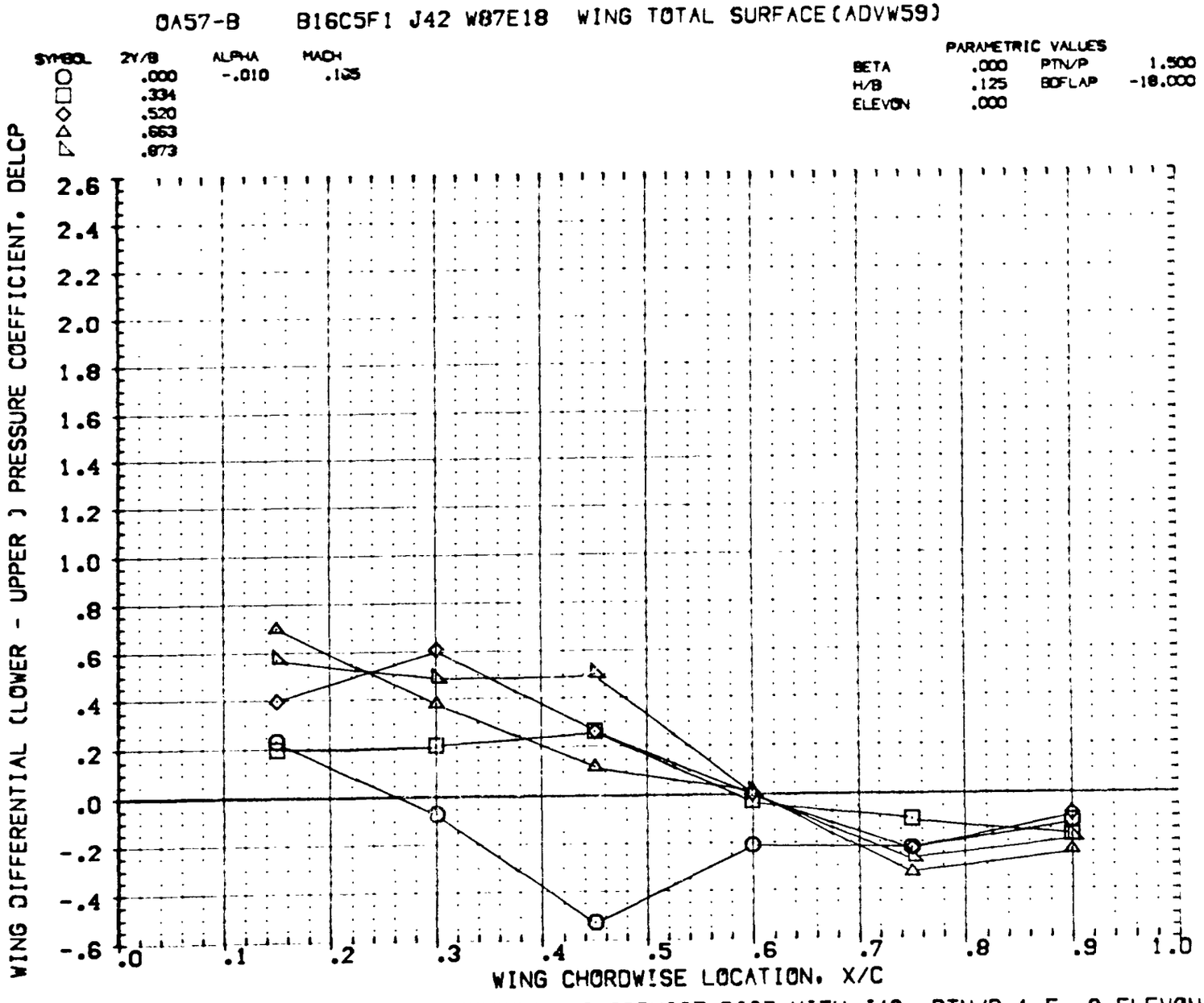


FIG 96 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

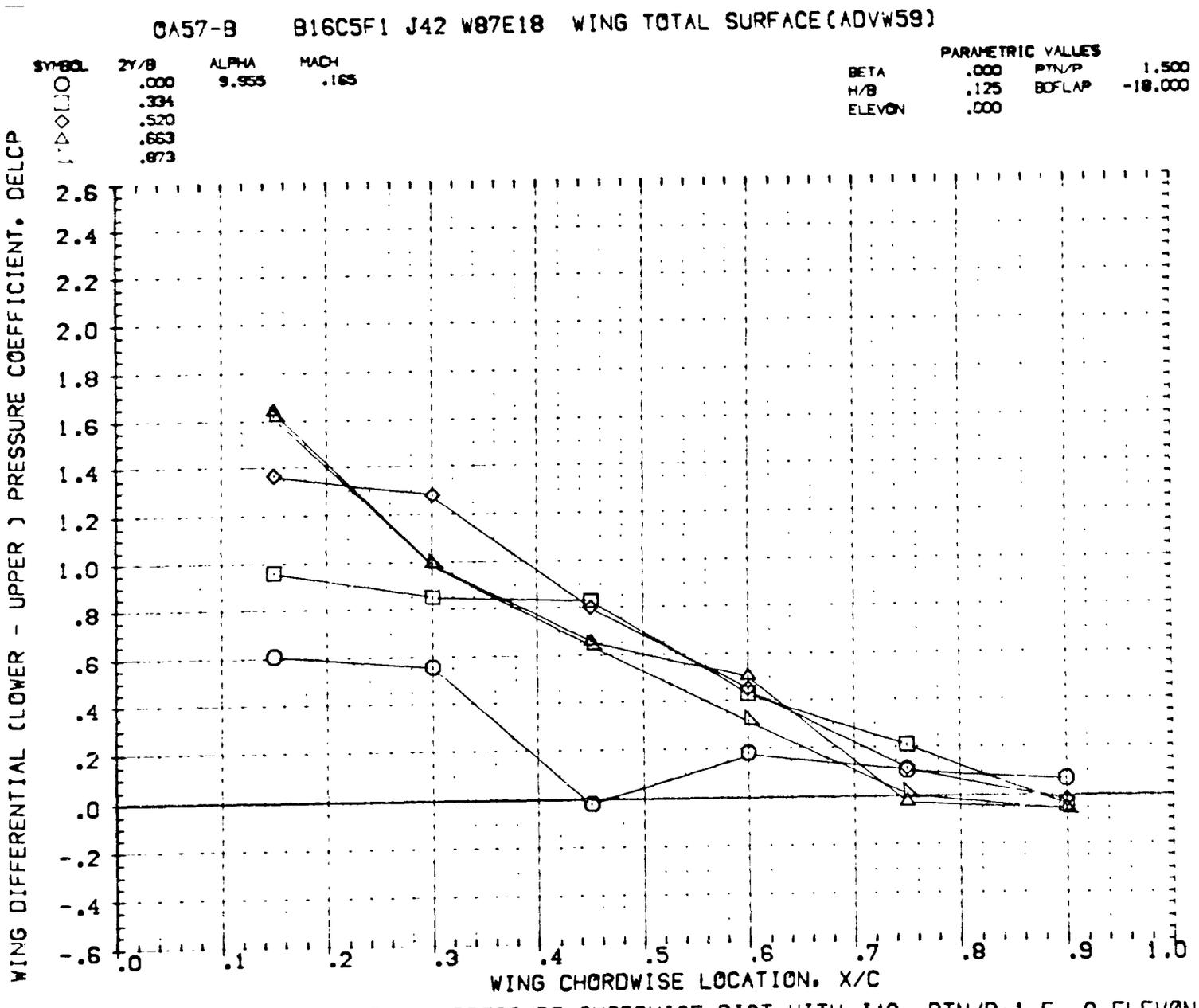


FIG 96 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

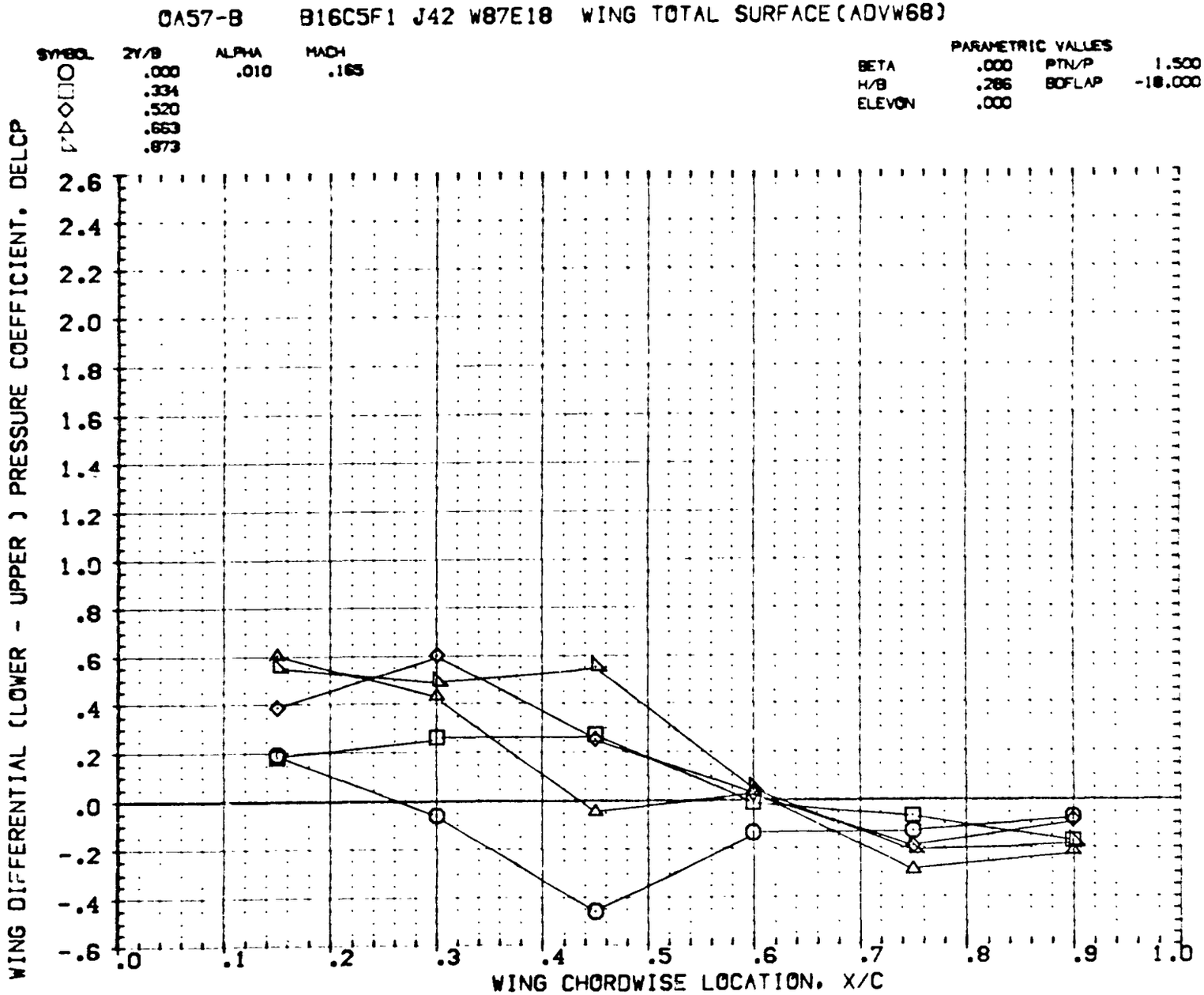


FIG 96 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

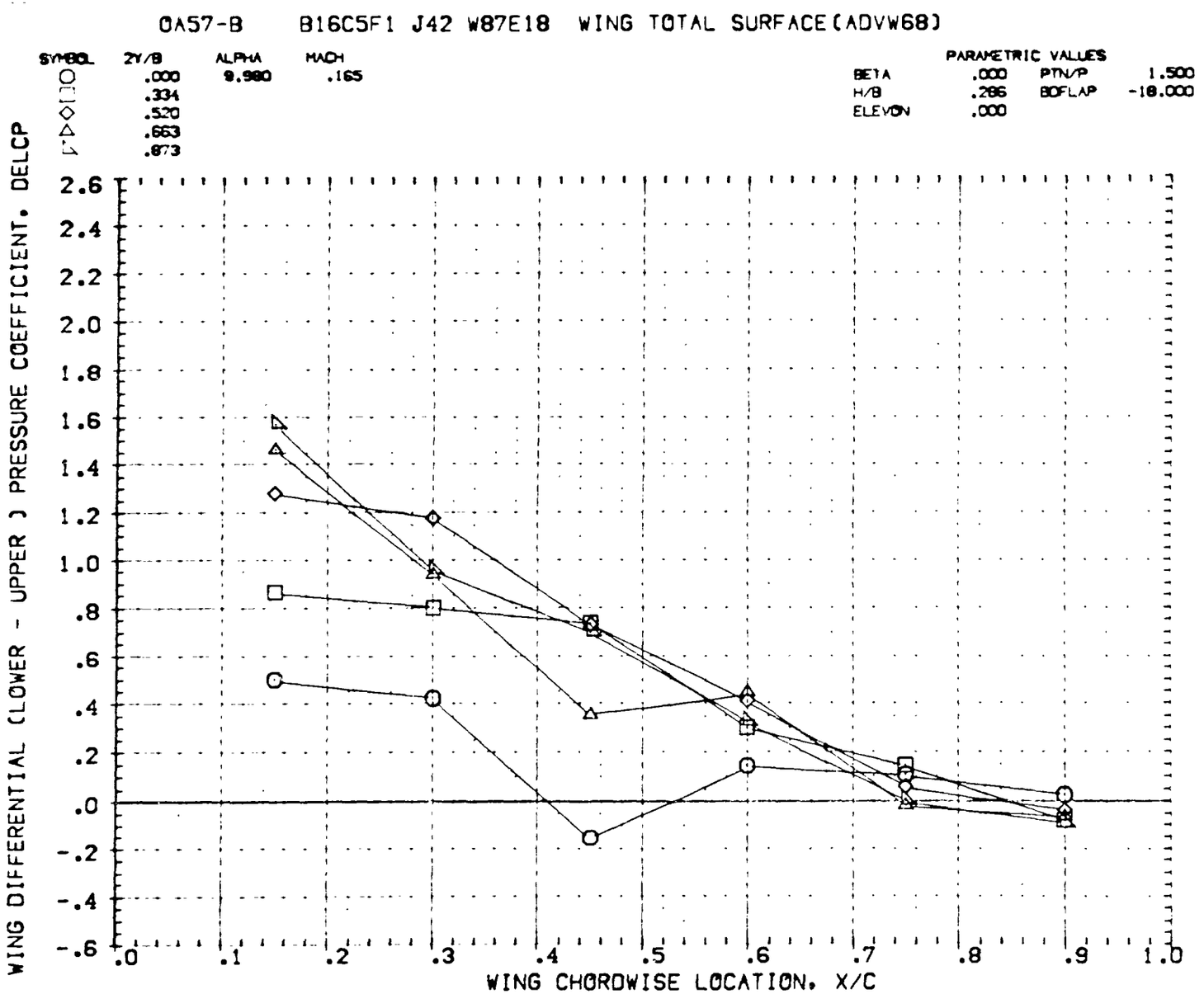


FIG 96 WING DIFFERENTIAL PRESSURE CHORDWISE DIST WITH J42, PTN/P=1.5, 0 ELEVON

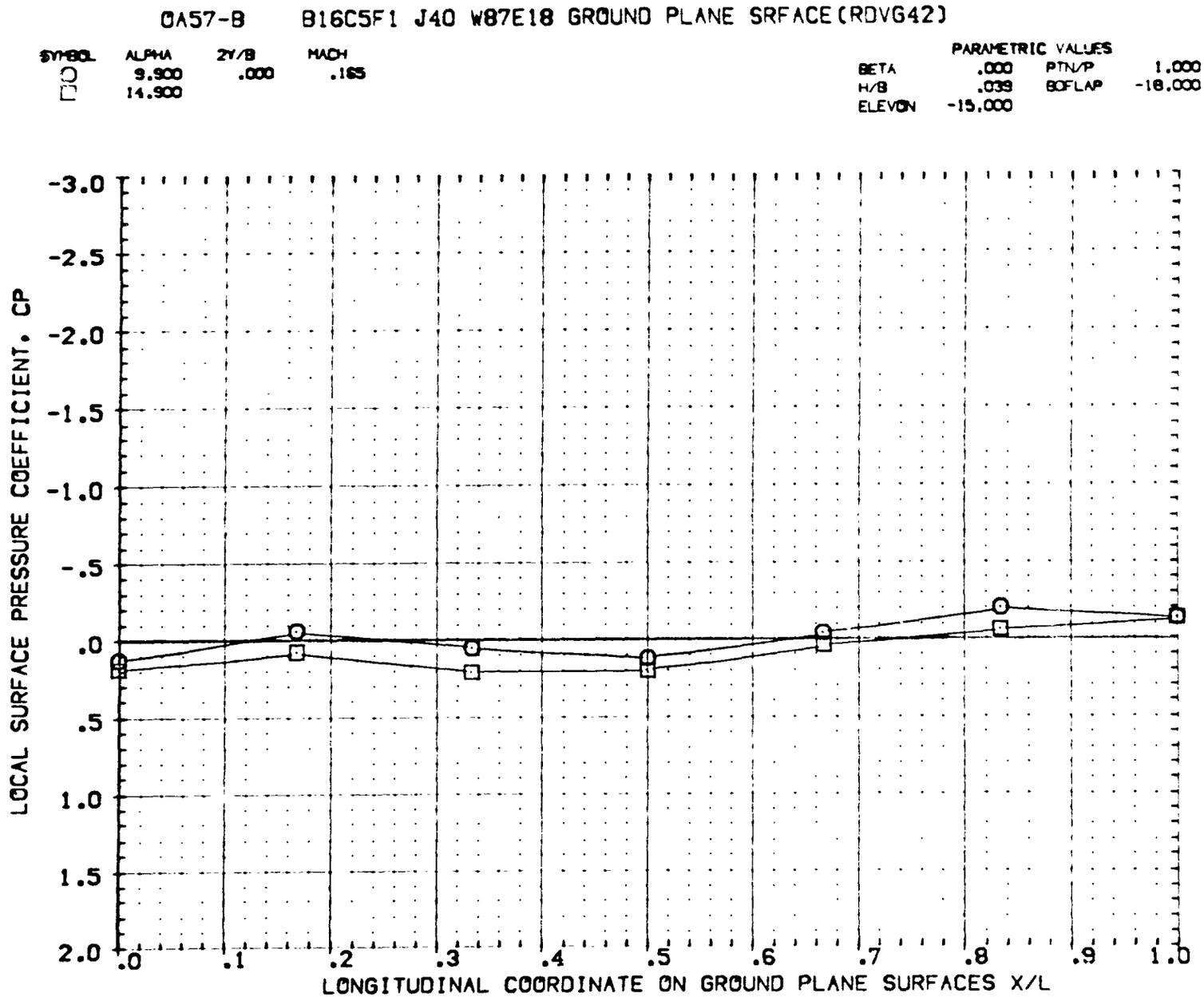


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

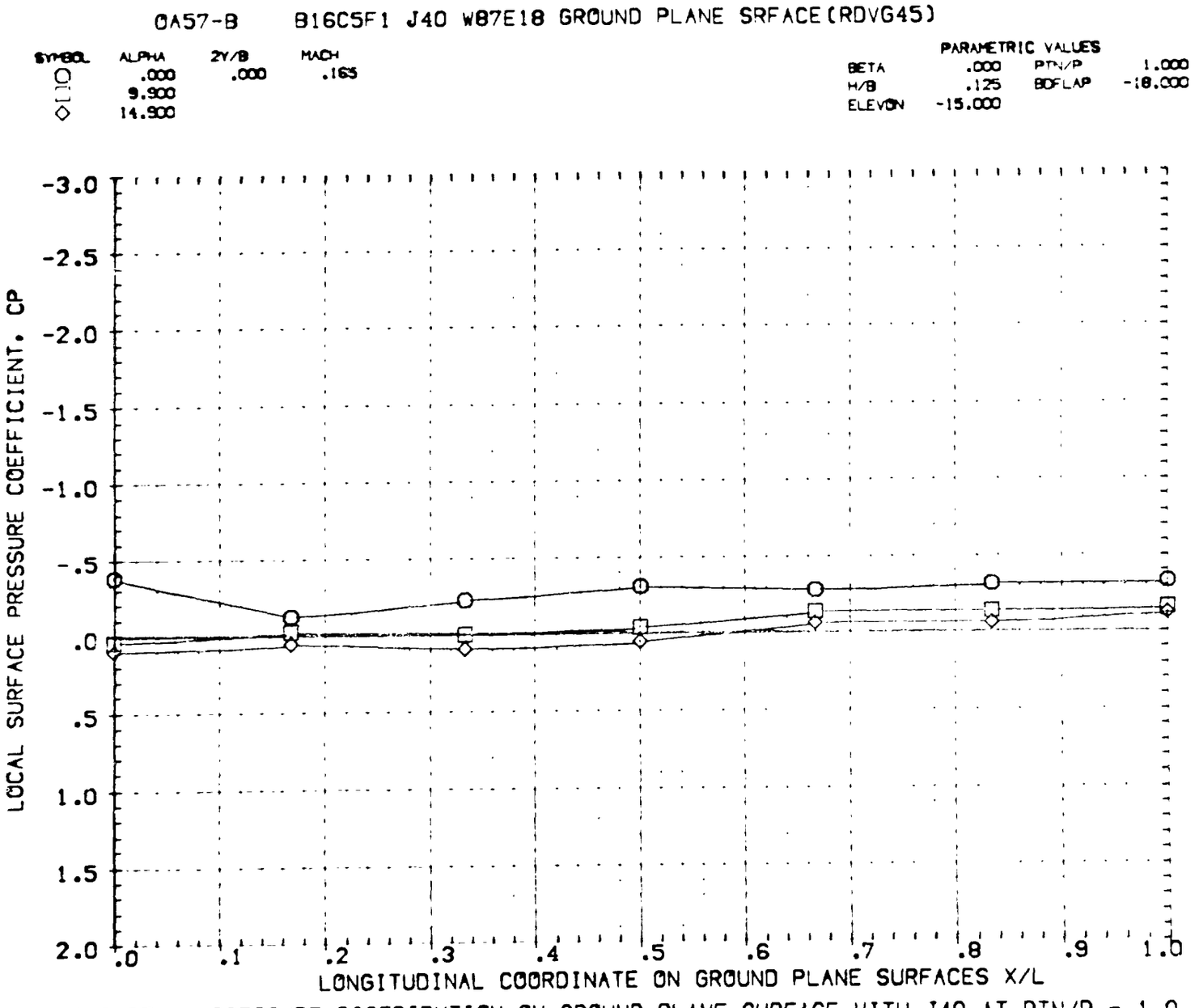


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

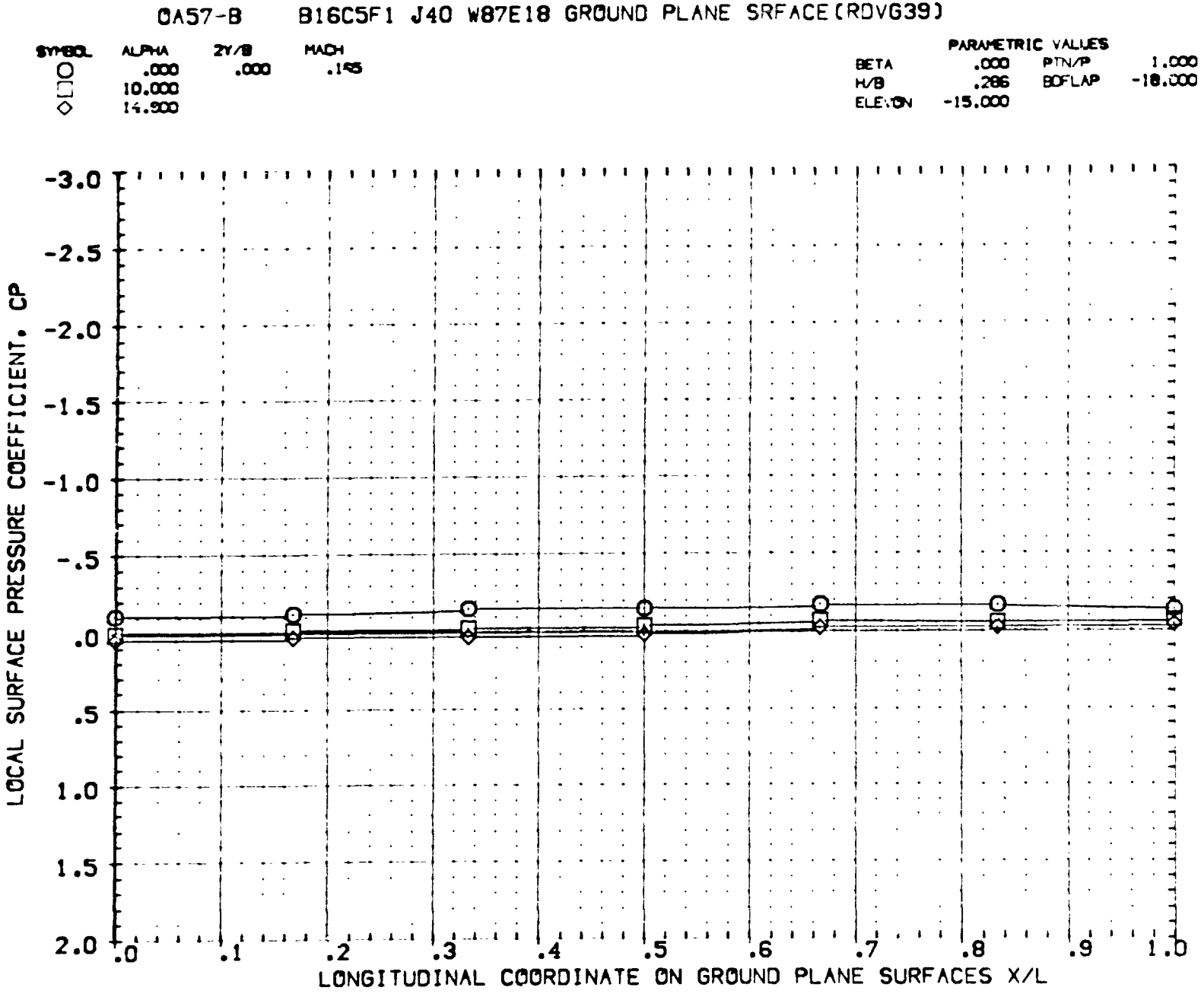


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

0A57-B B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDVG03)

SYMBOL	ALPHA	ZY/B	MACH
○	9.900	.000	.165
□	15.000		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.000
H/B	.039	BDFLAP	-18.000
ELEVON	.000		

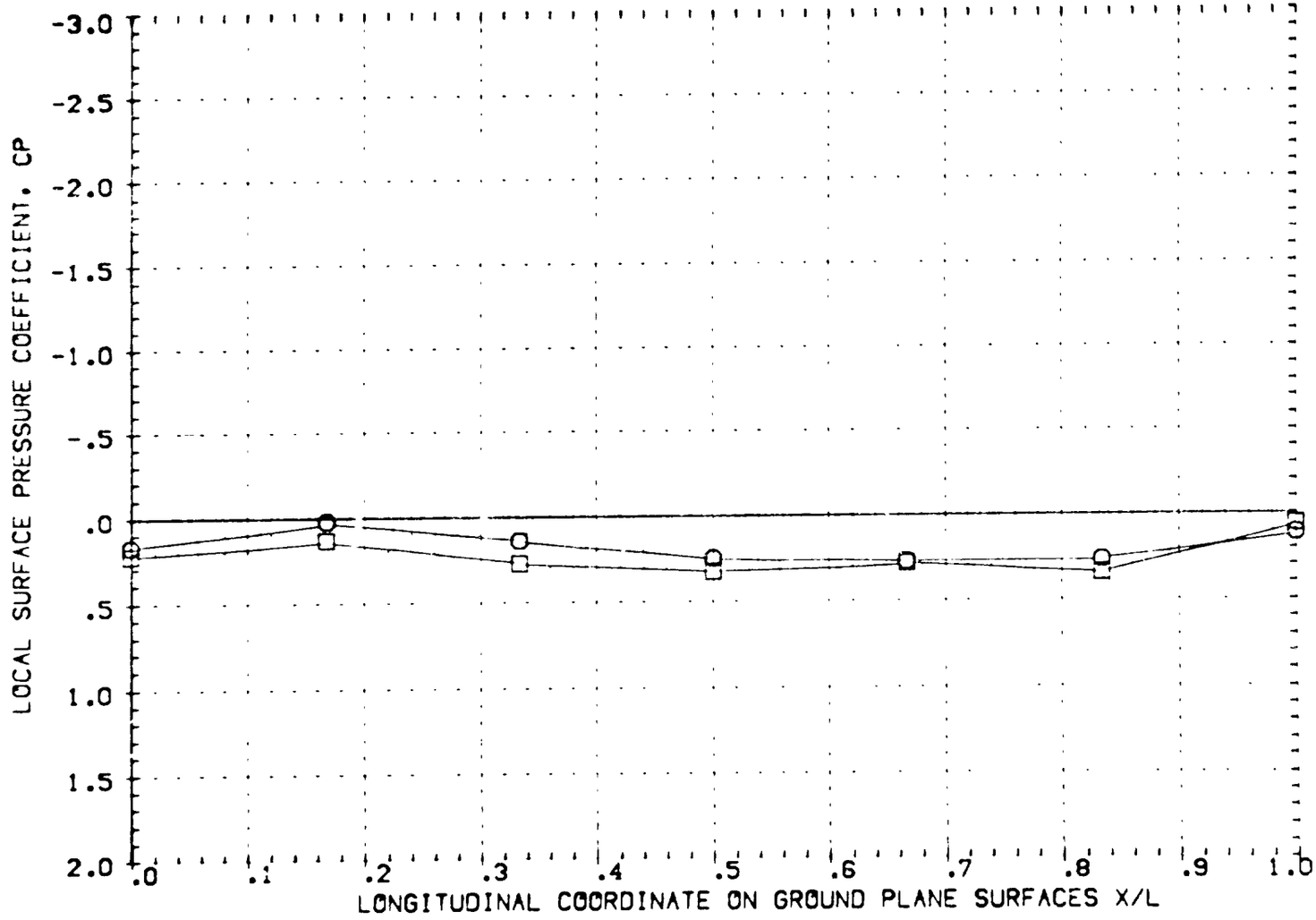


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

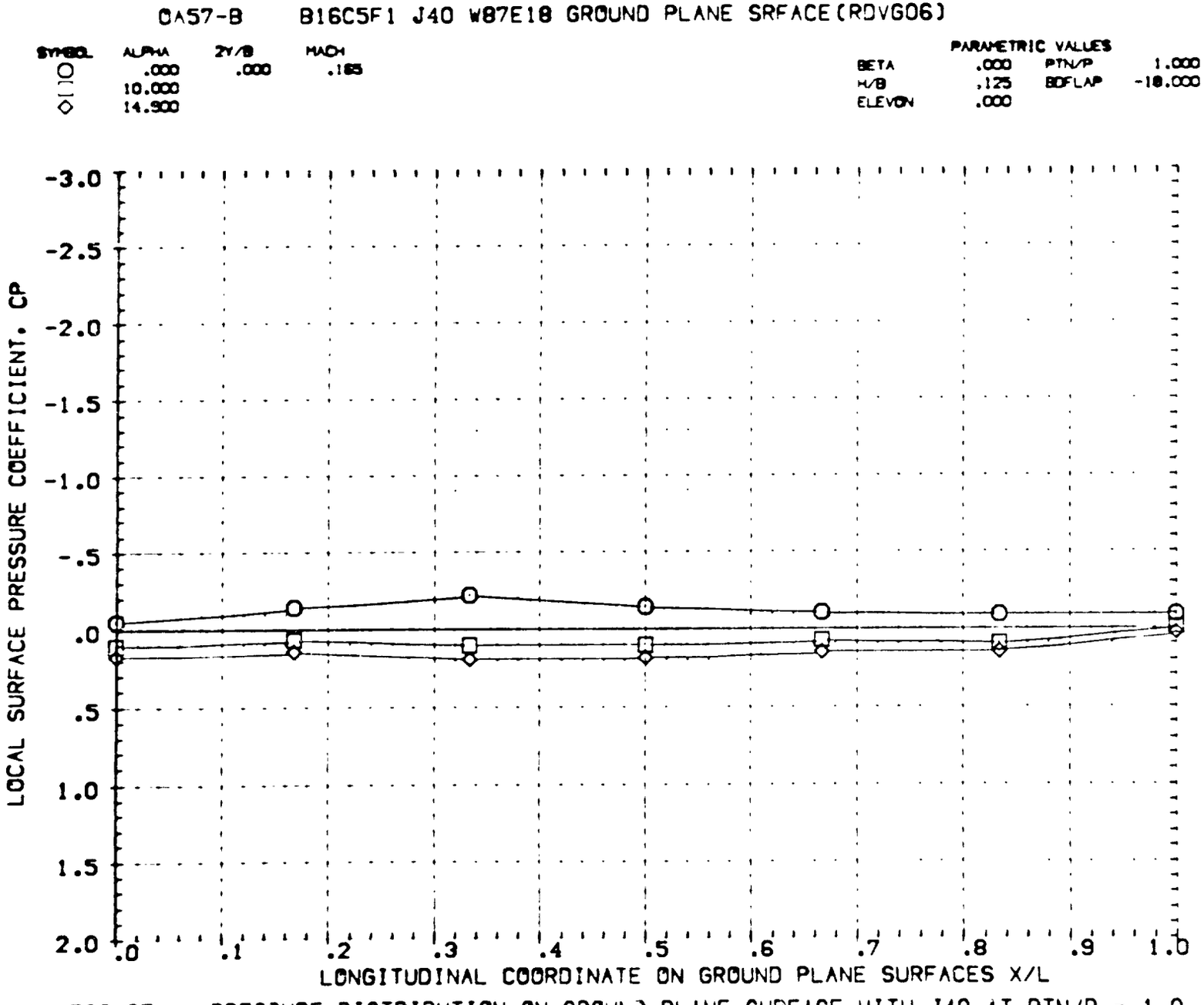


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

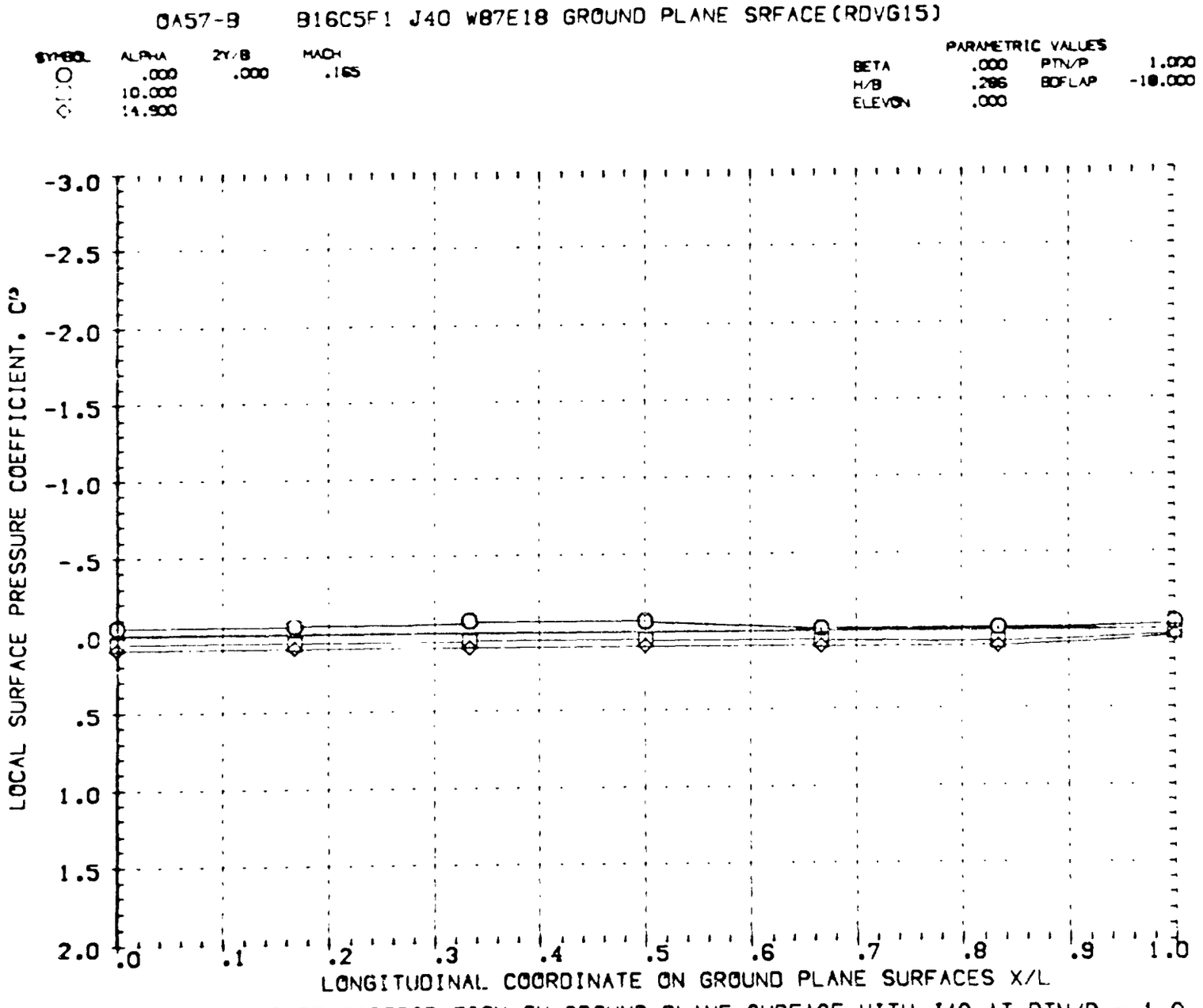


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

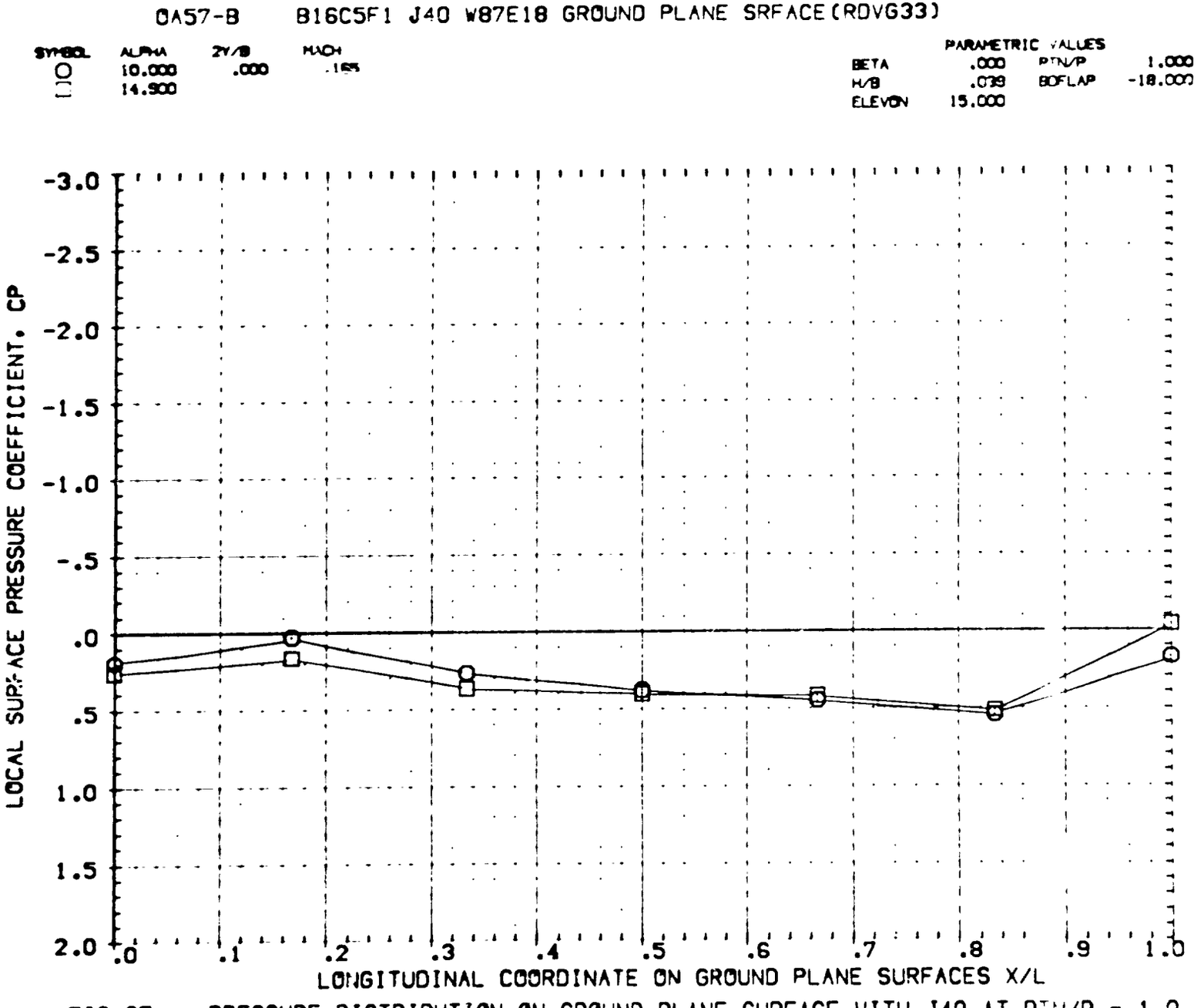


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

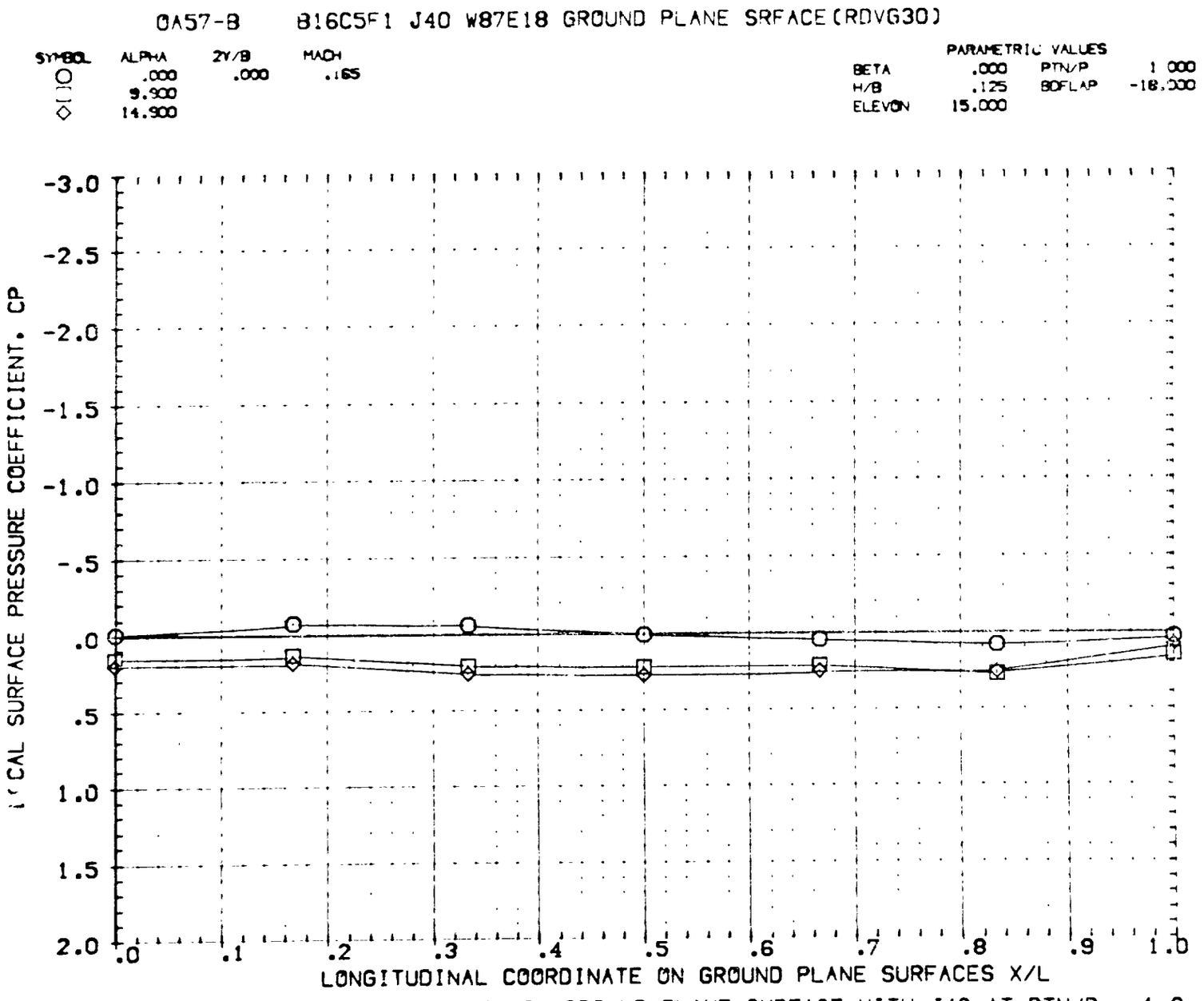


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

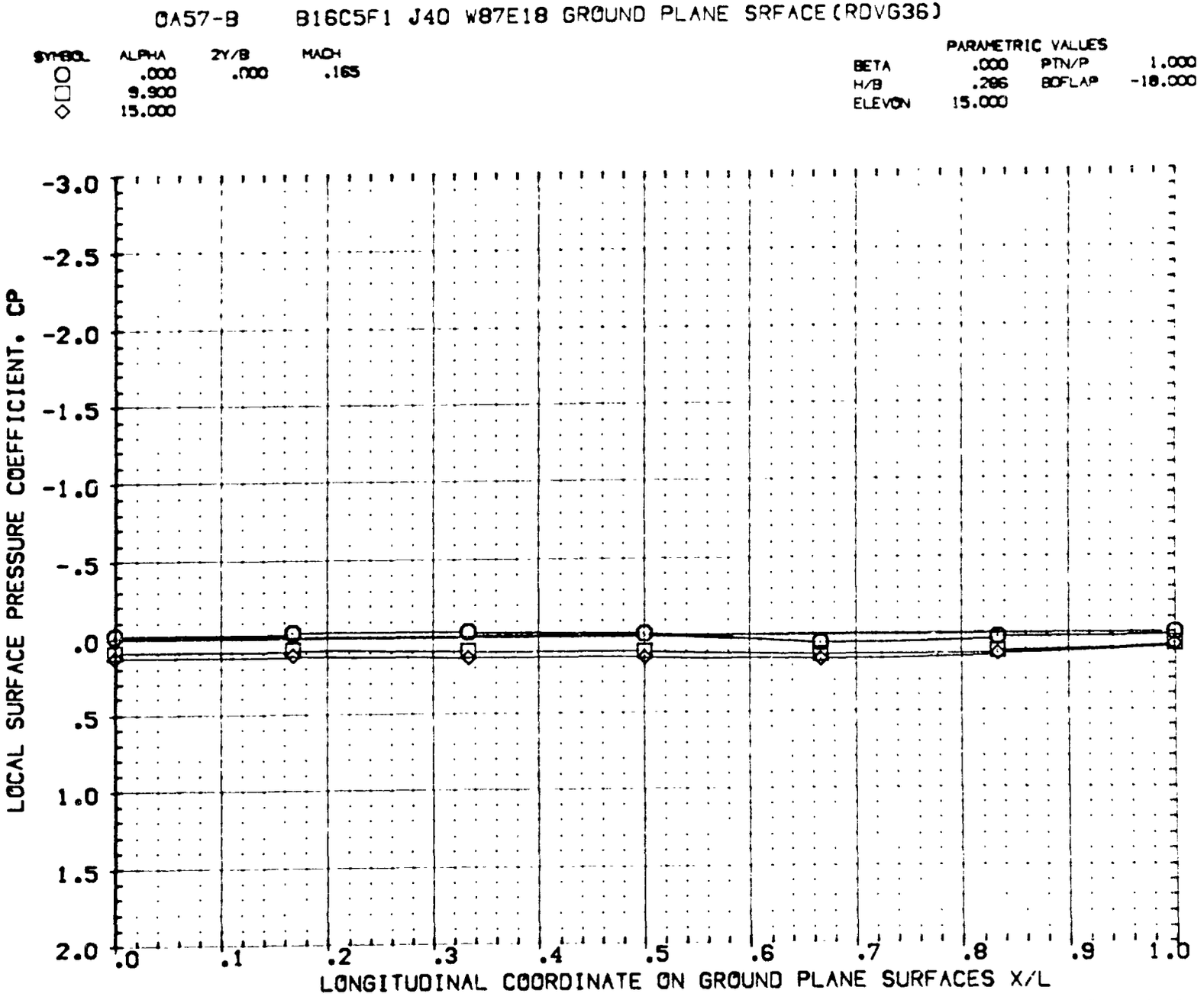


FIG 97 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.0

0A57-B B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDVG41)

SYMBOL	ALPHA	2Y/B	MACH
○	9.900	.000	.165
□	14.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.300
H/B	.039	BOFLAP	-10.000
ELEVON	-15.000		

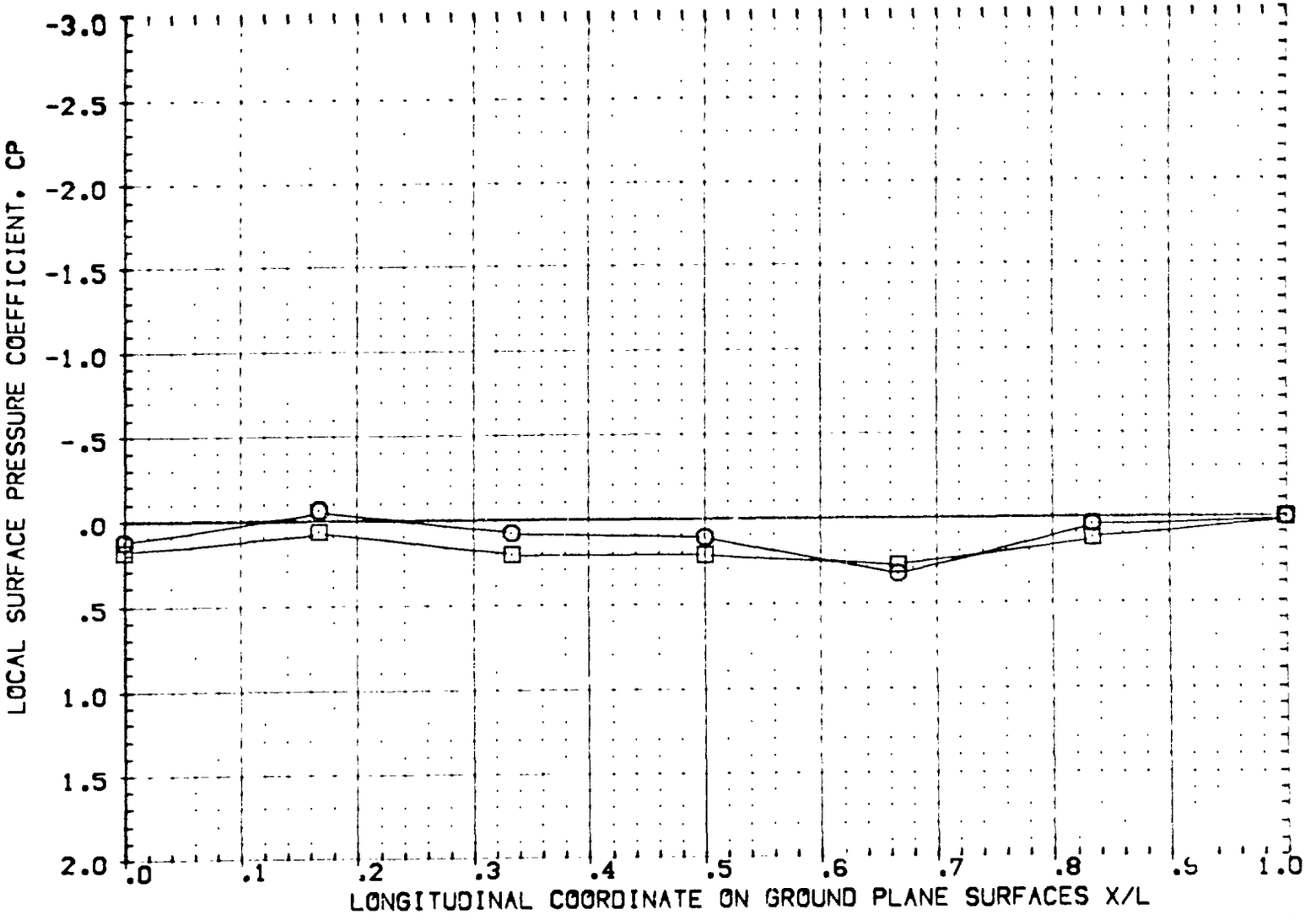


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

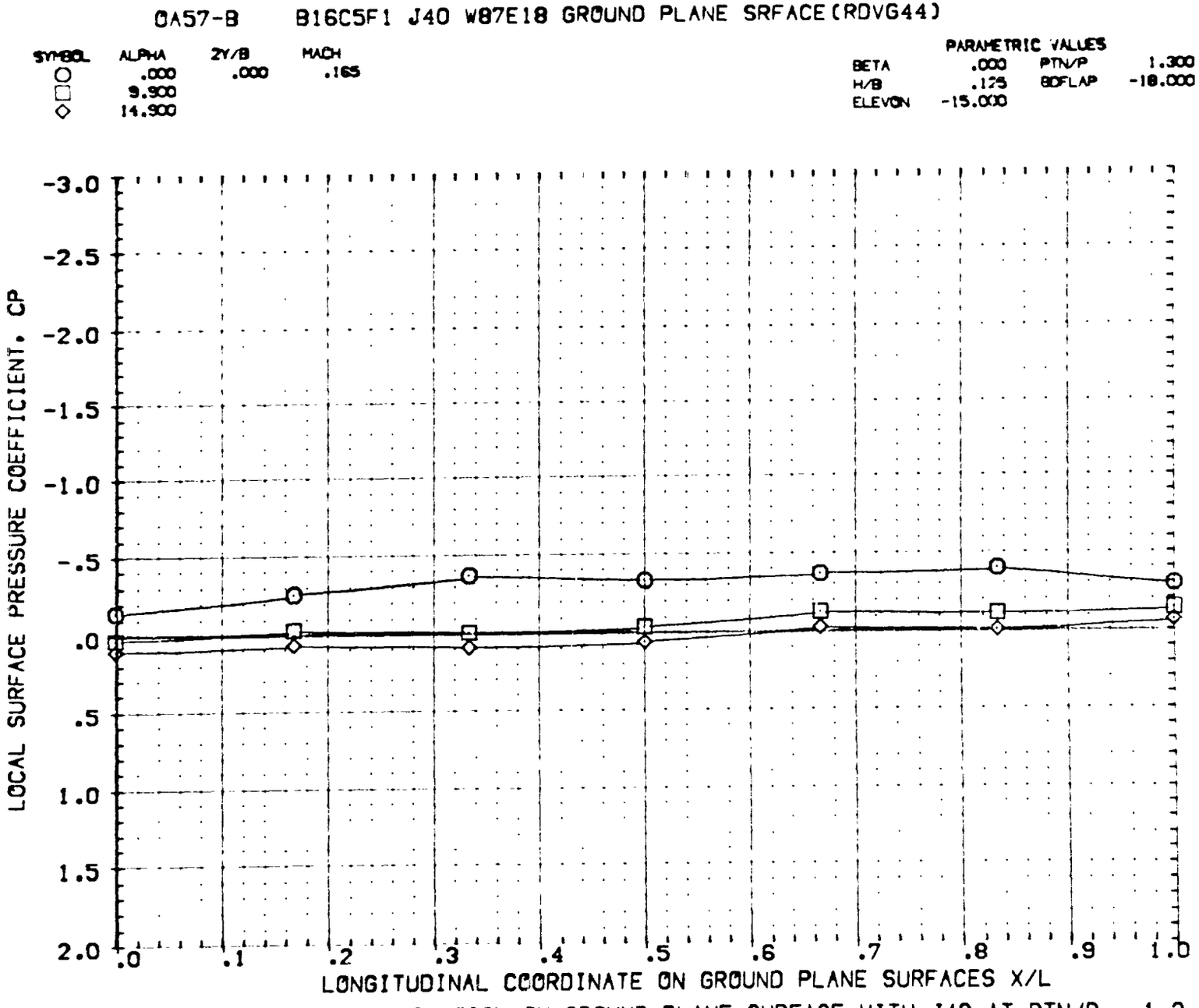


FIG 93 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

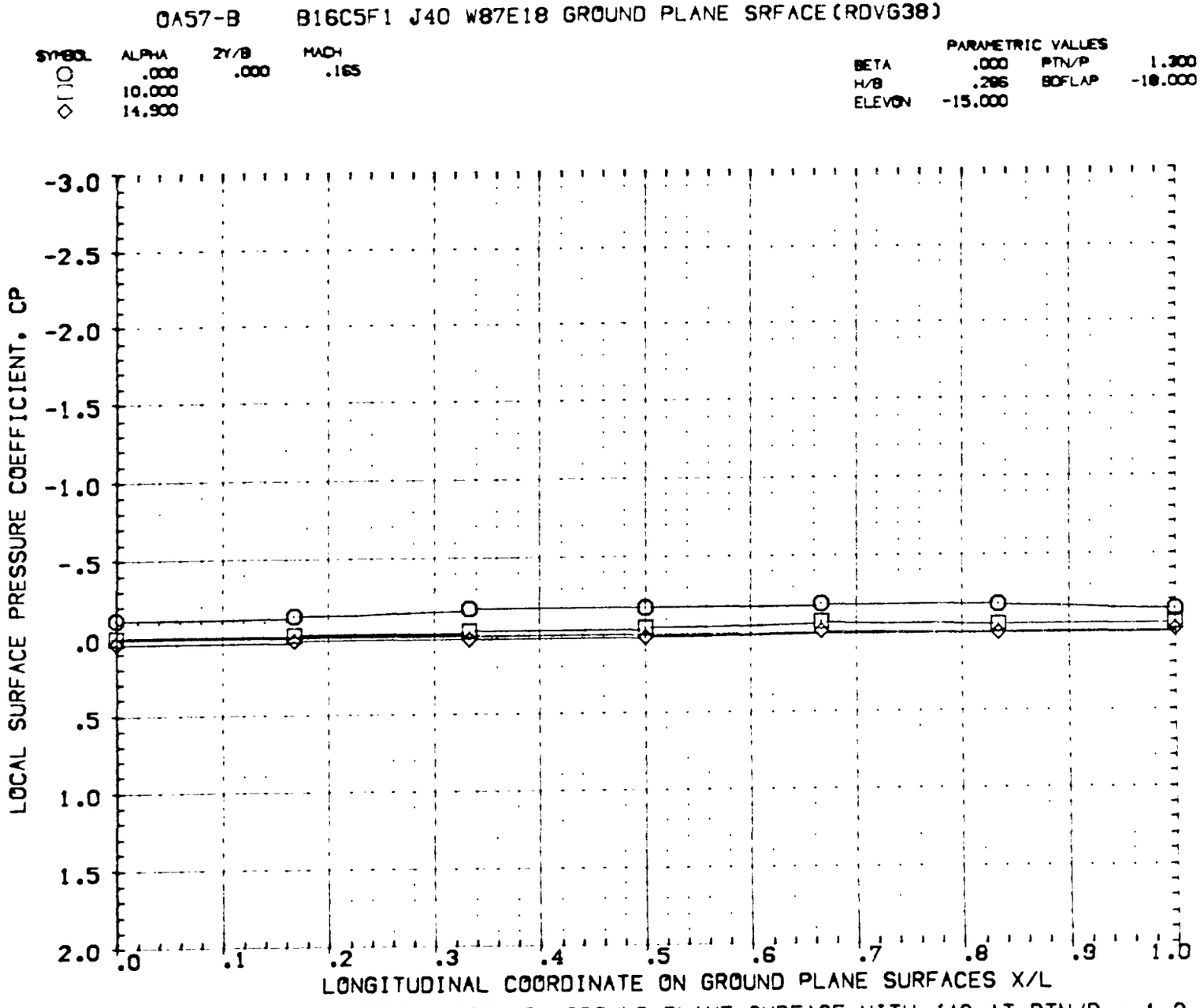


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

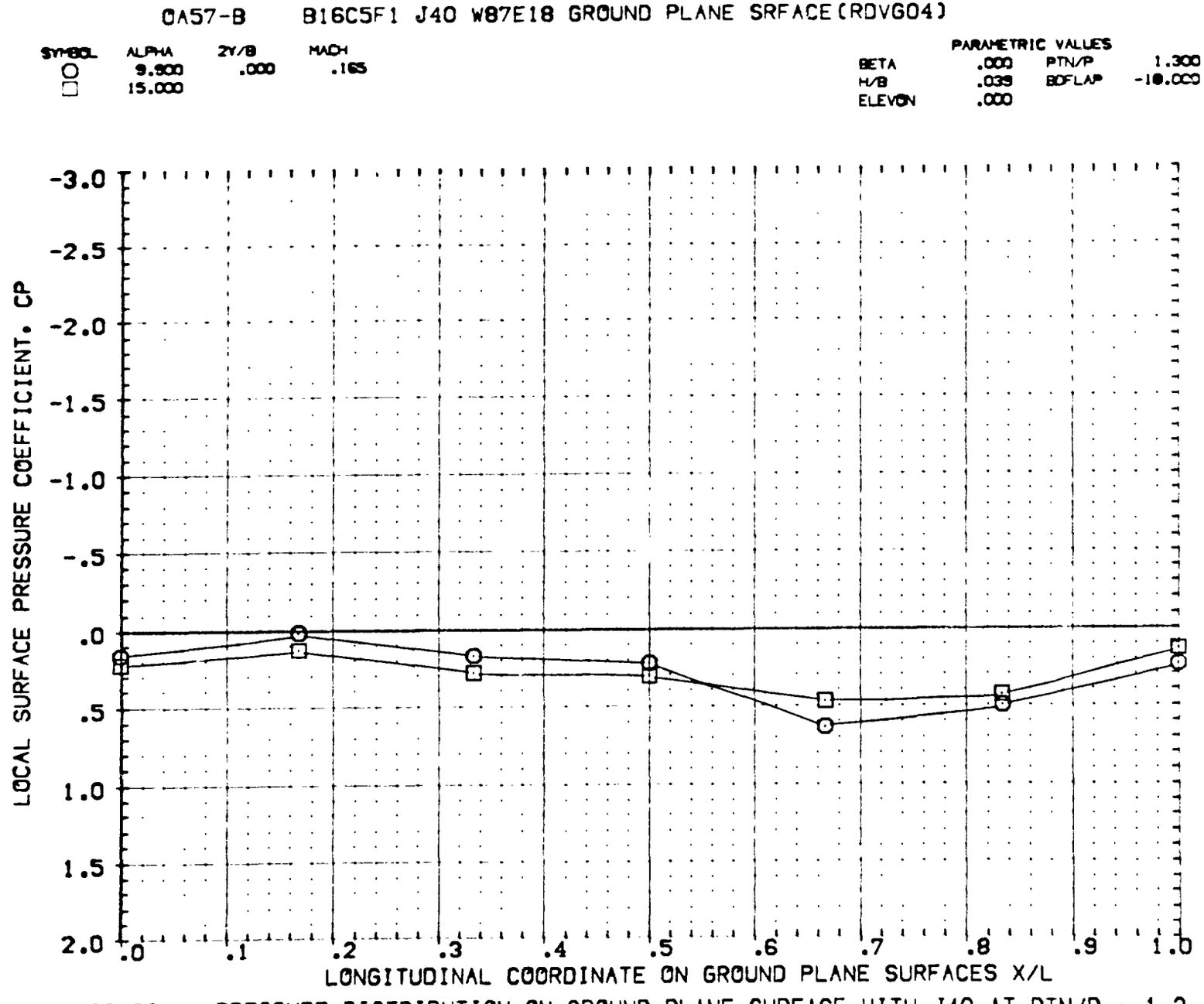


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

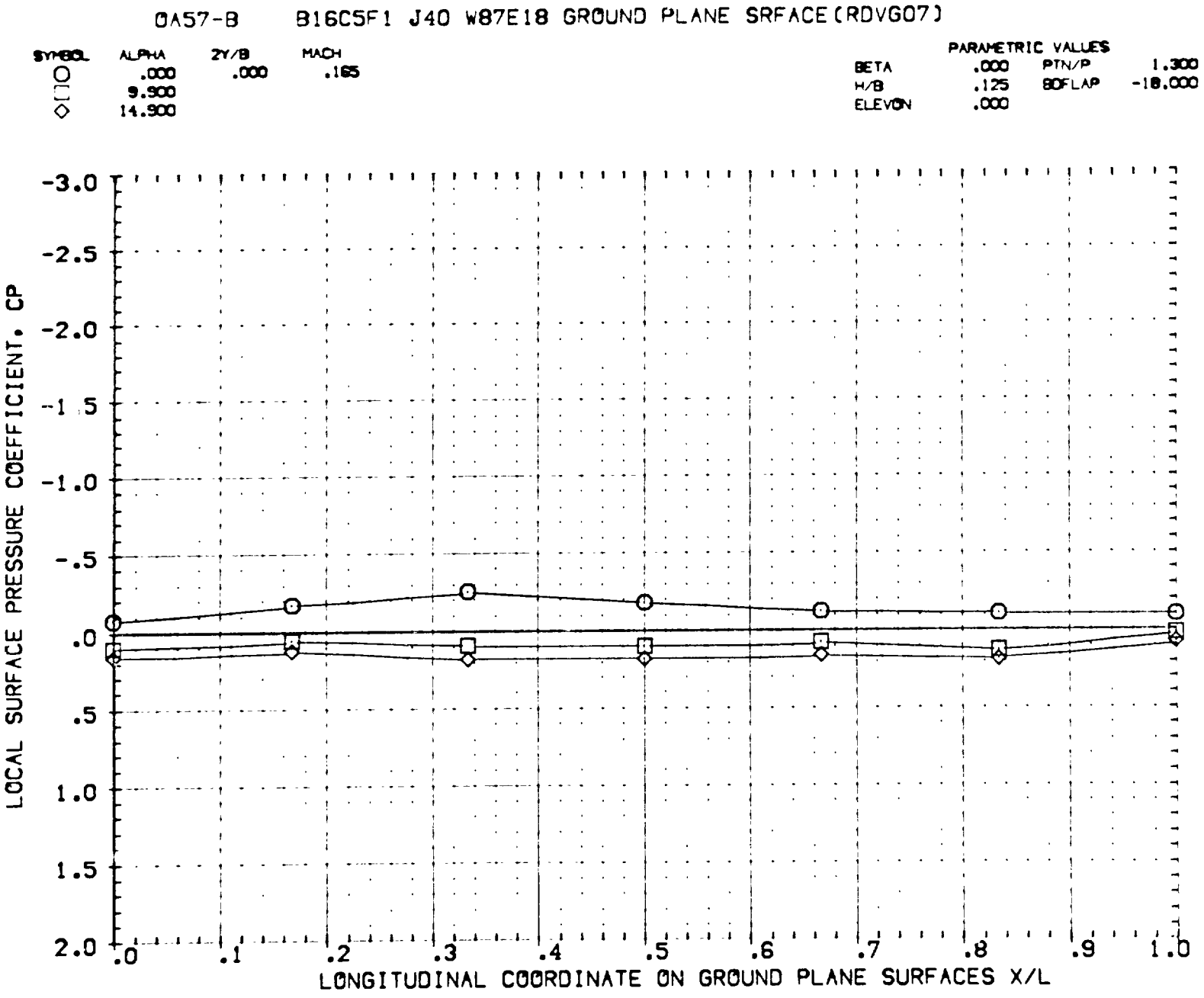


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

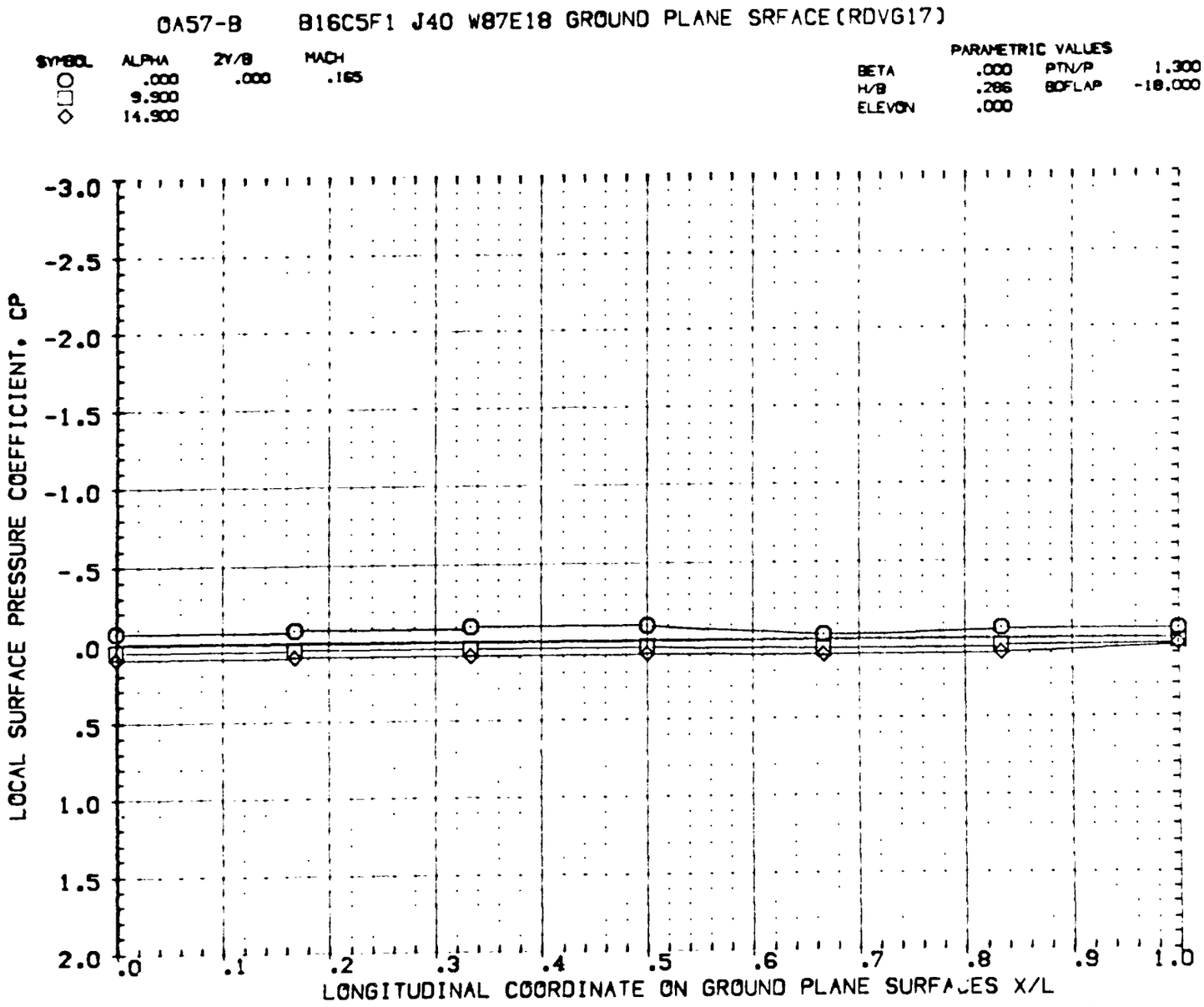


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

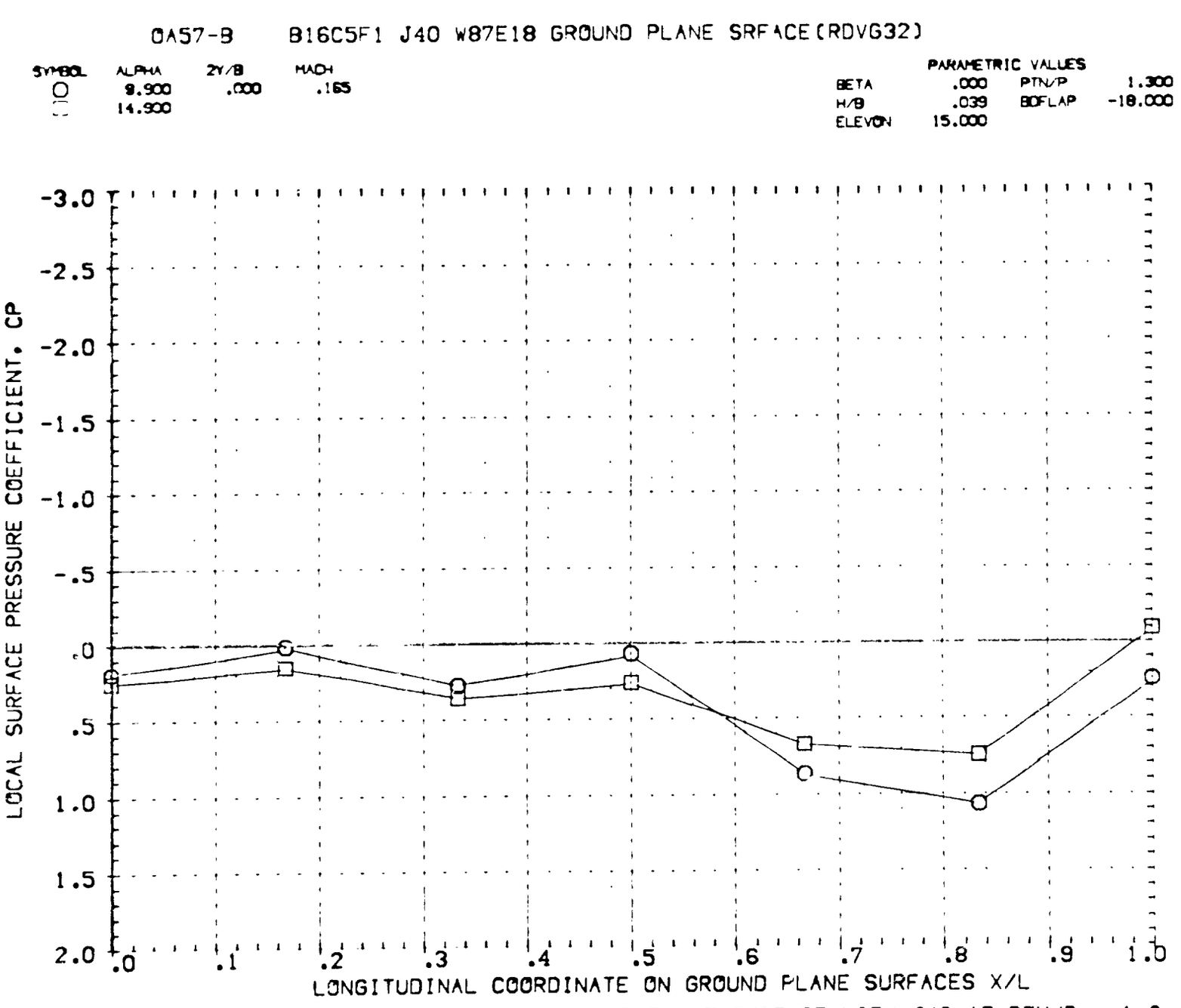


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

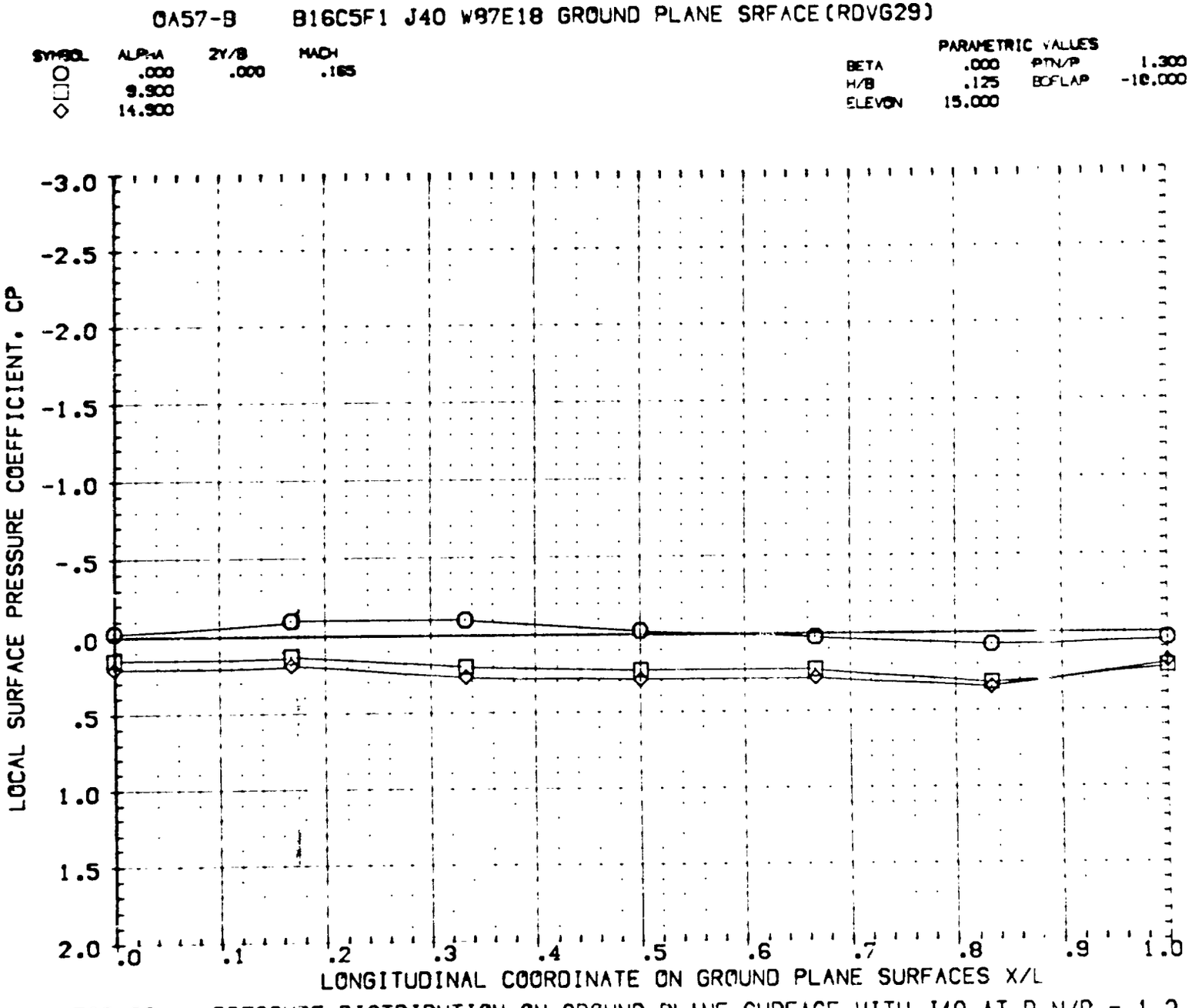


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT P N/P = 1.3

0A57-8 B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDVG35)

SYMBOL	ALPHA	ZY/B	MACH
○	.000	.000	.165
□	9.900		
◇	14.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.300
H/B	.286	BDFLAP	-18.000
ELEVON	15.000		

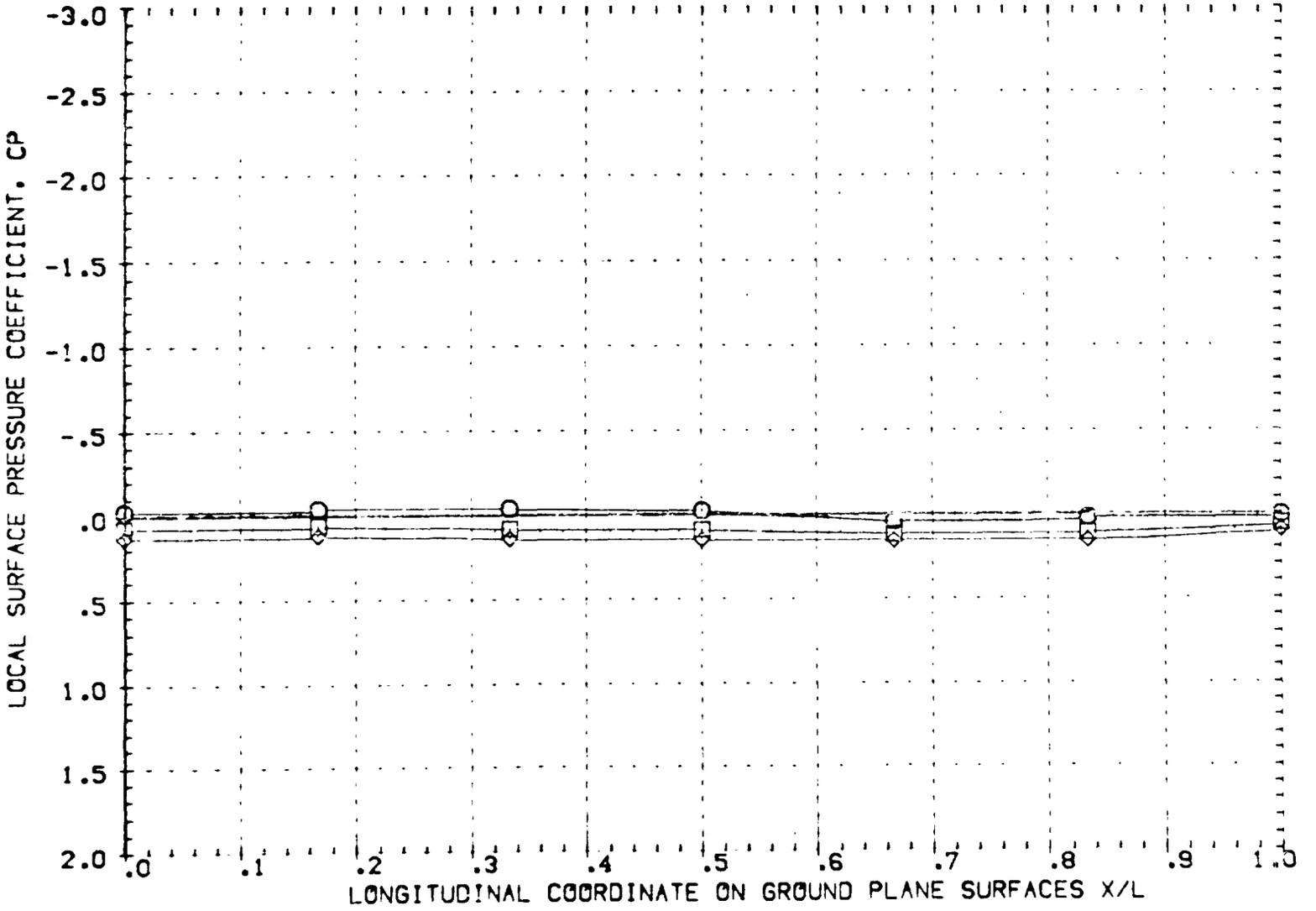


FIG 98 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.3

0A57-B B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDVG40)

SYMBOL	ALPHA	ZY/B	MACH
○	9.900	.000	.165
□	14.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H/B	.039	BDFLAP	-18.000
ELEVON	-15.000		

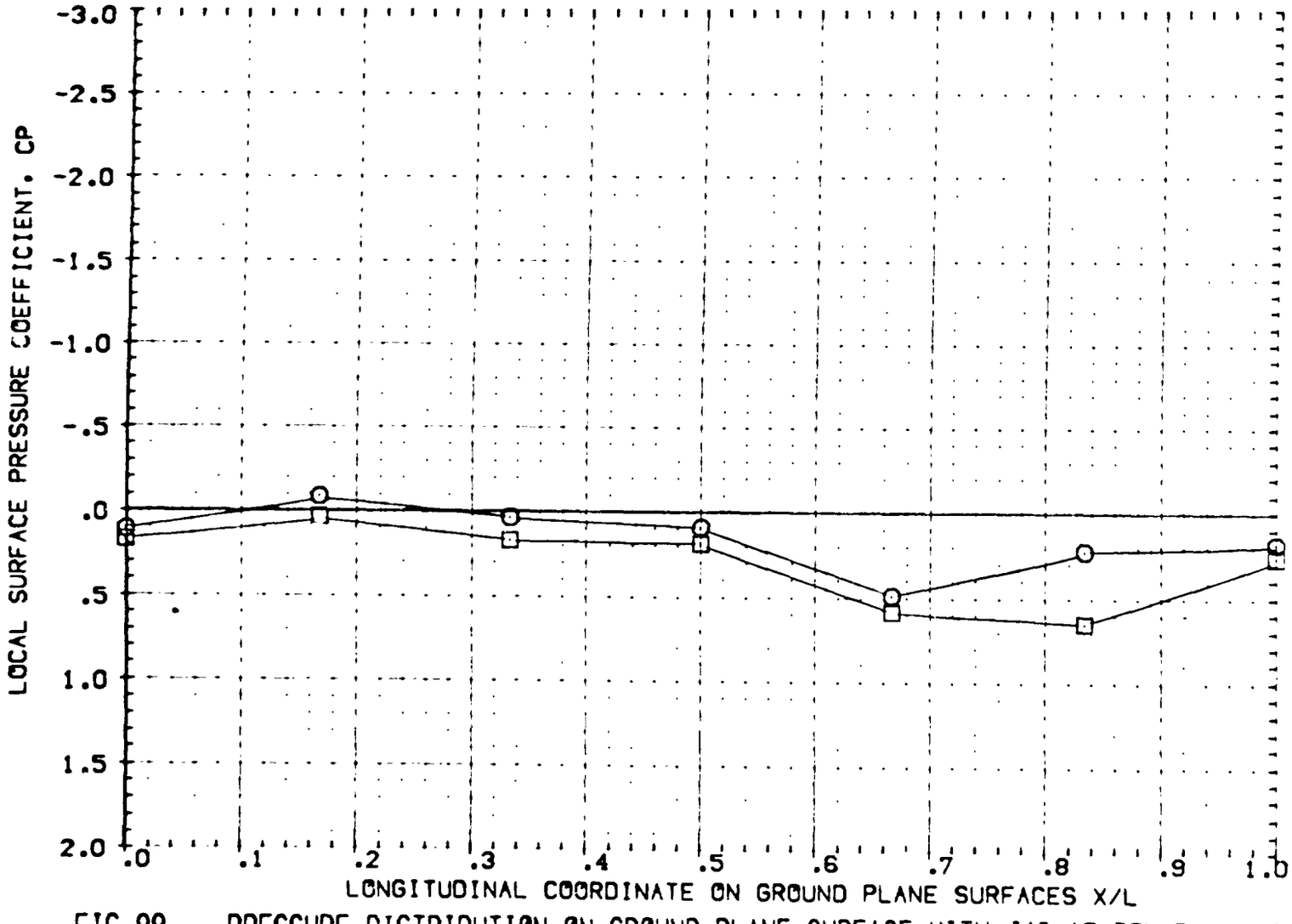


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

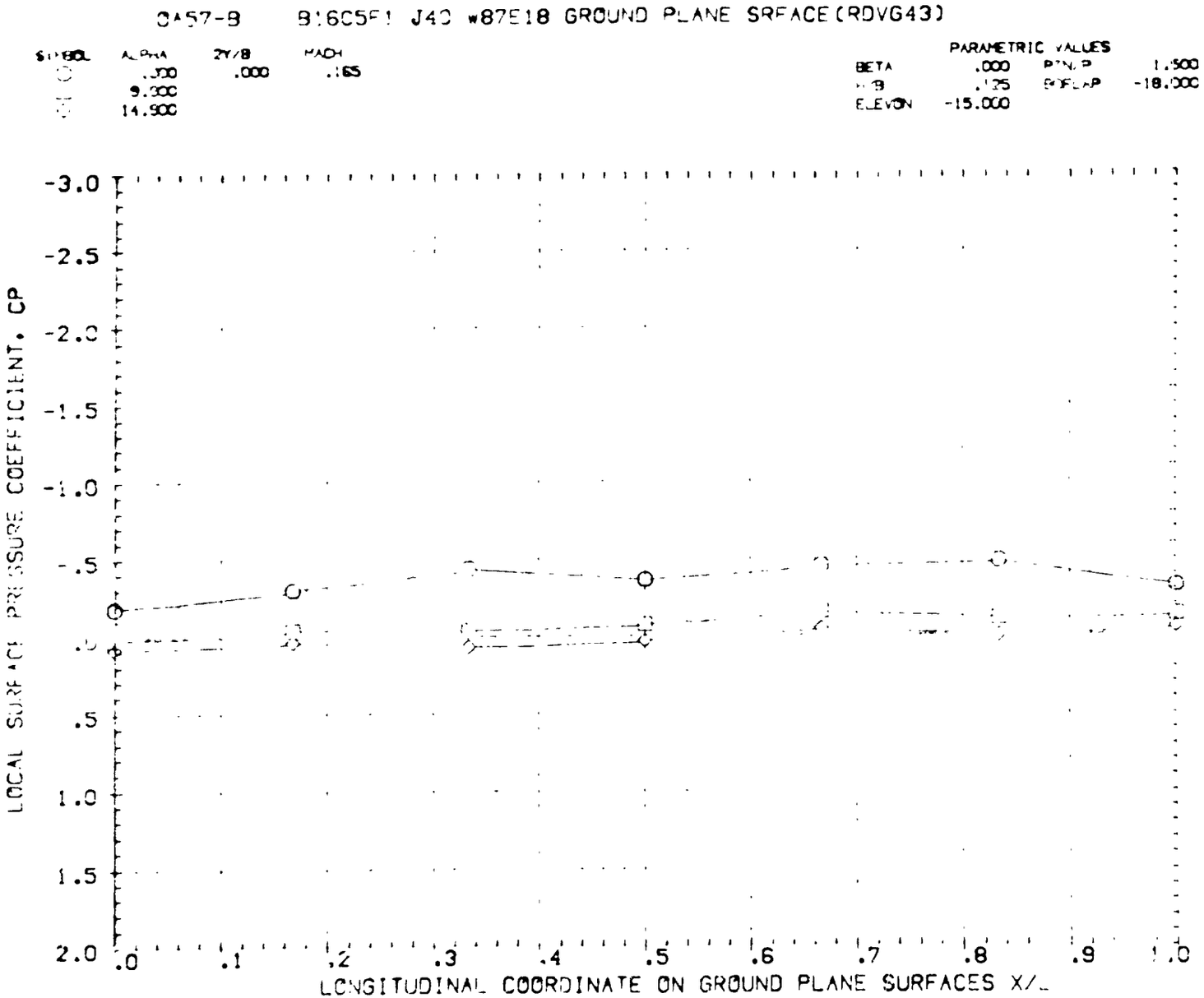


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT P'N/P = 1.5

0A57-B B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDVG37)

SYMBOL	ALPHA	ZY/B	MACH
O	.000	.000	.165
	9.900		
	14.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H/B	.286	BOFLAP	-18.000
ELEVON	-15.000		

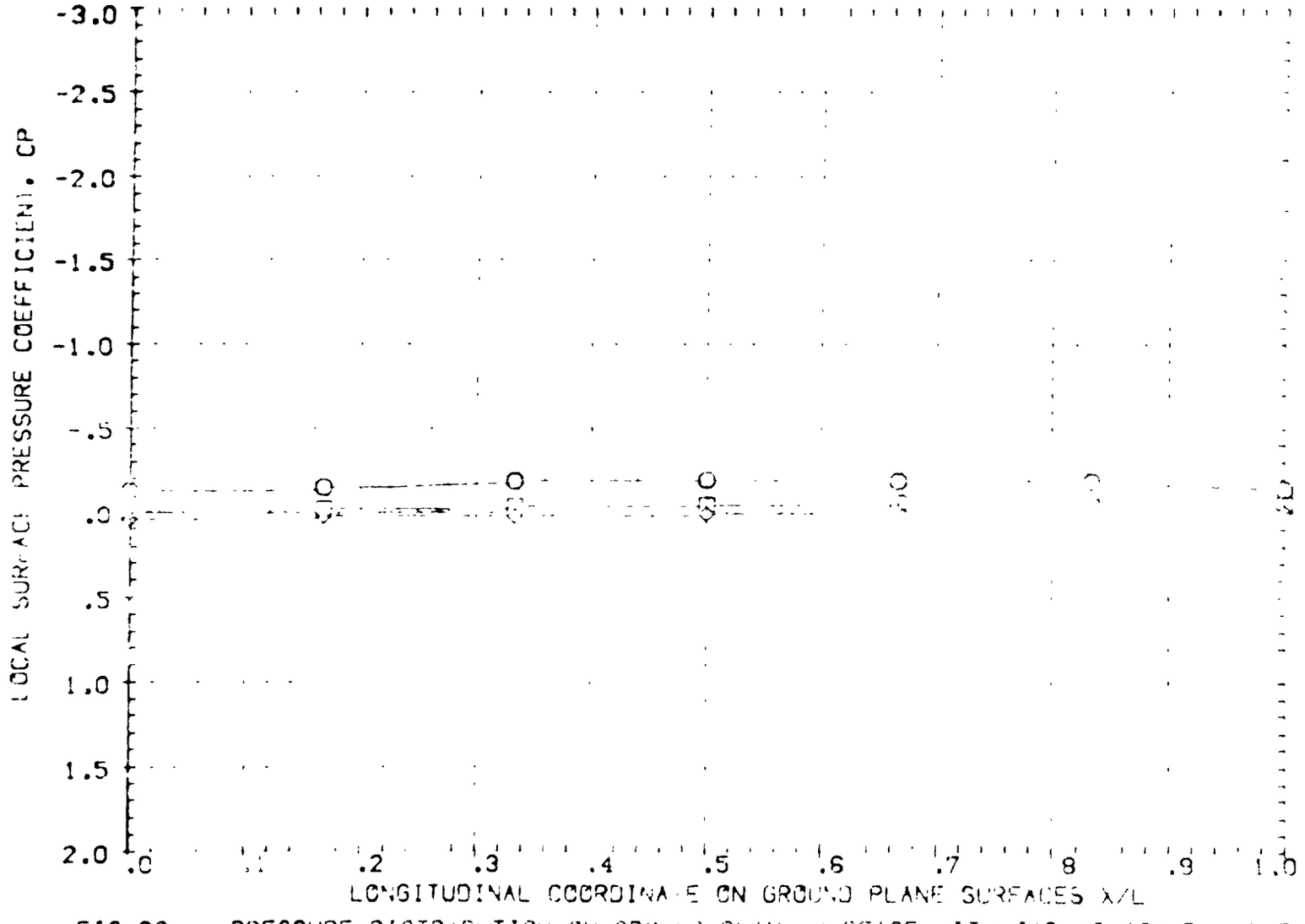


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

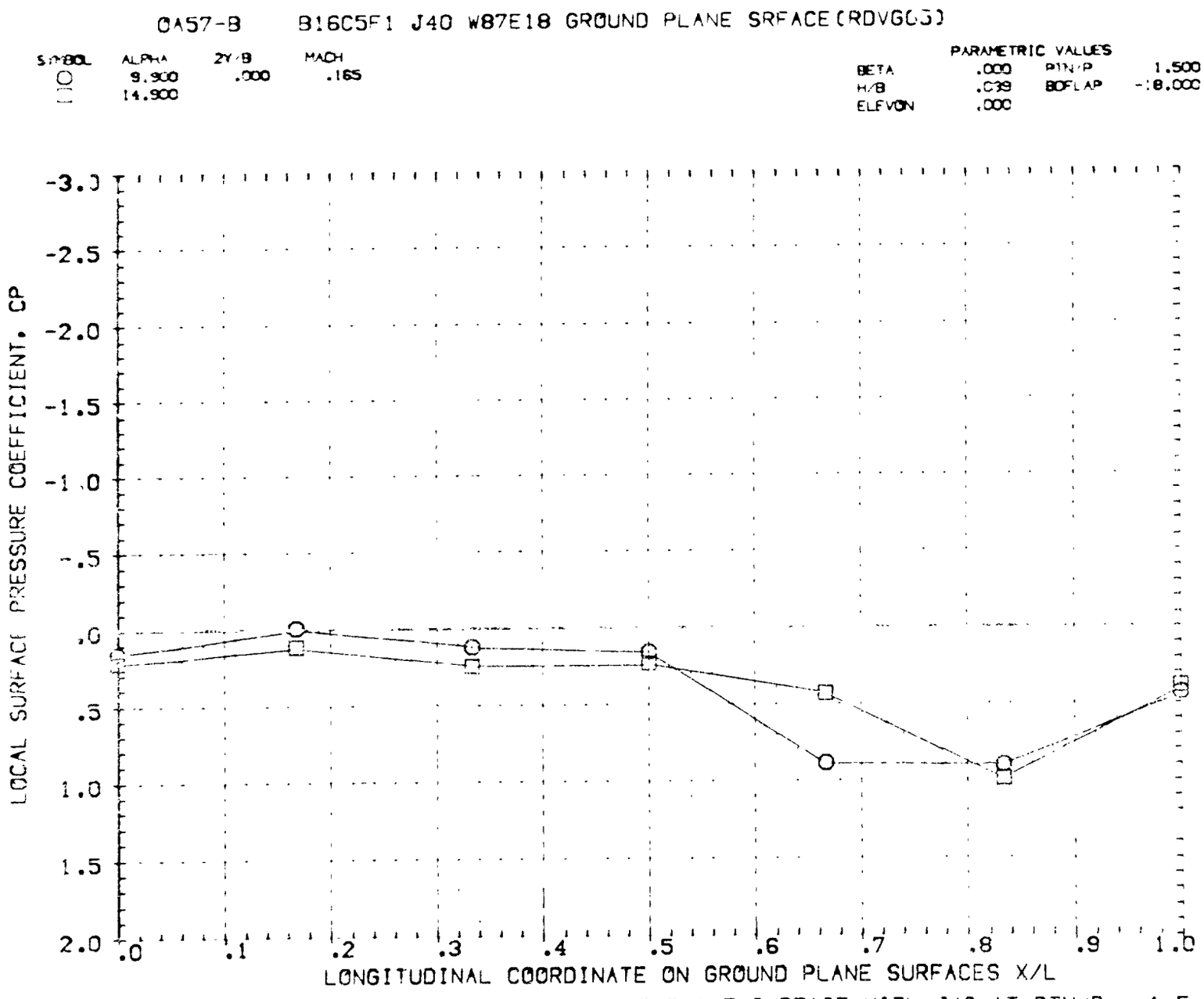


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

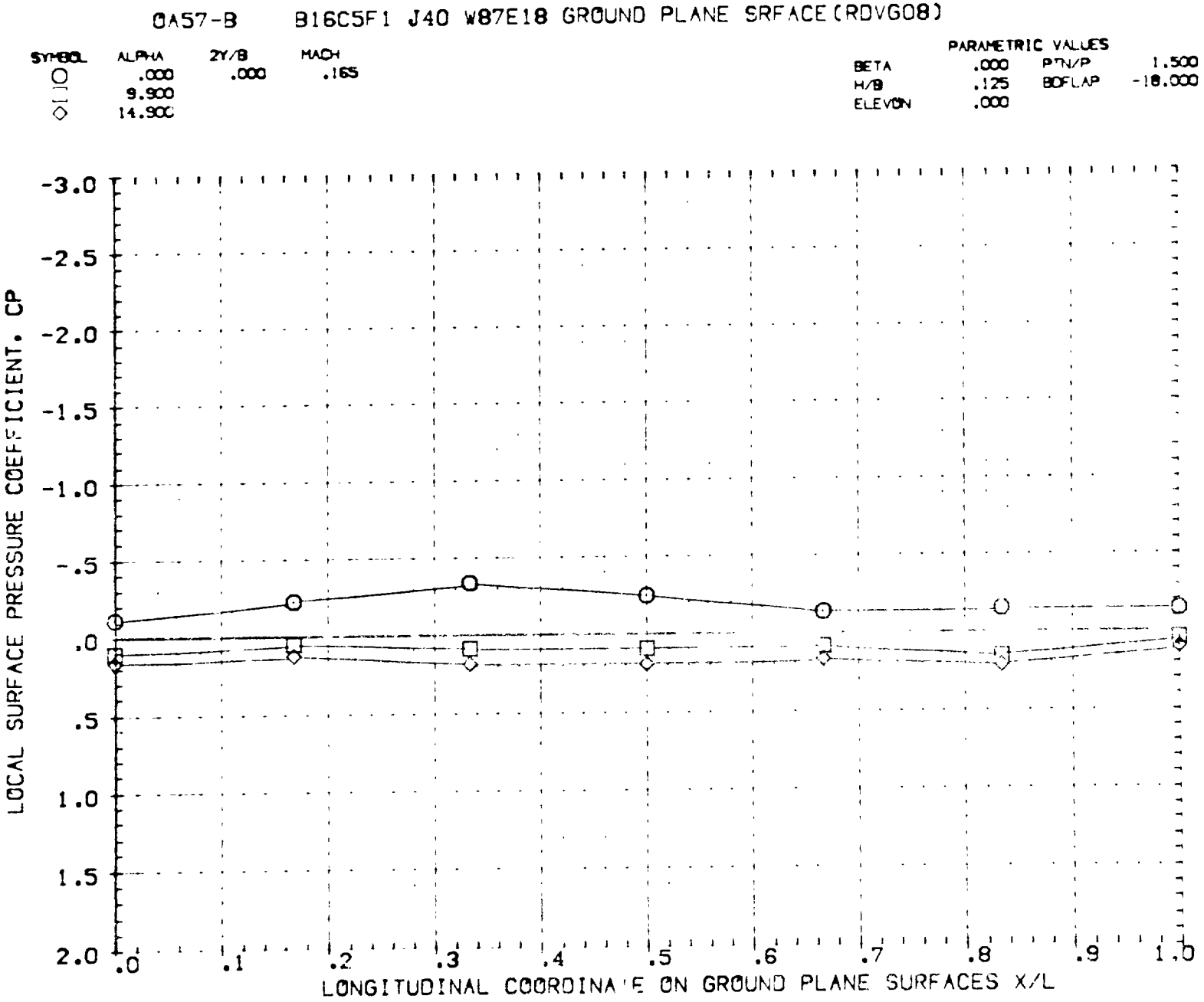


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

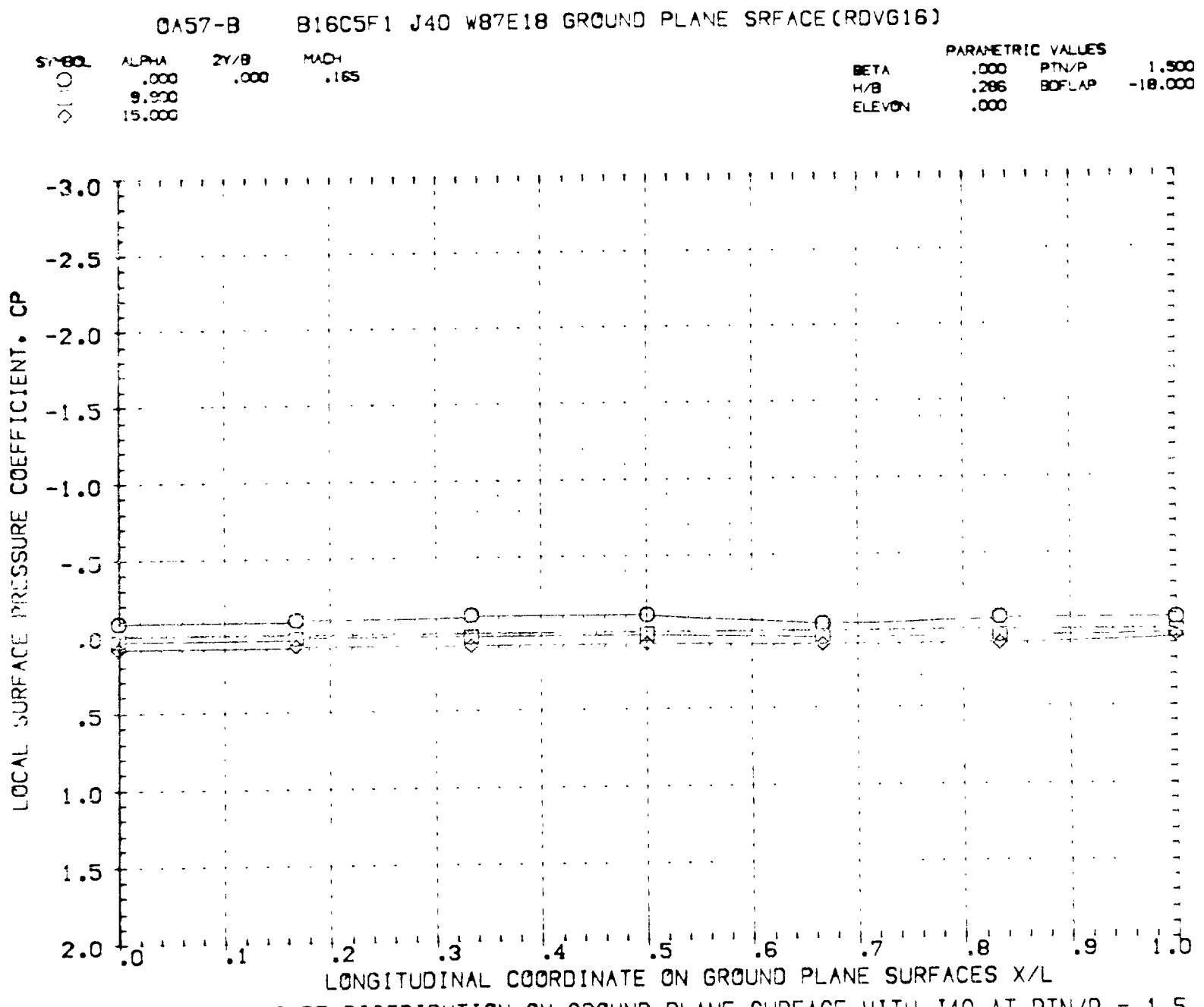


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

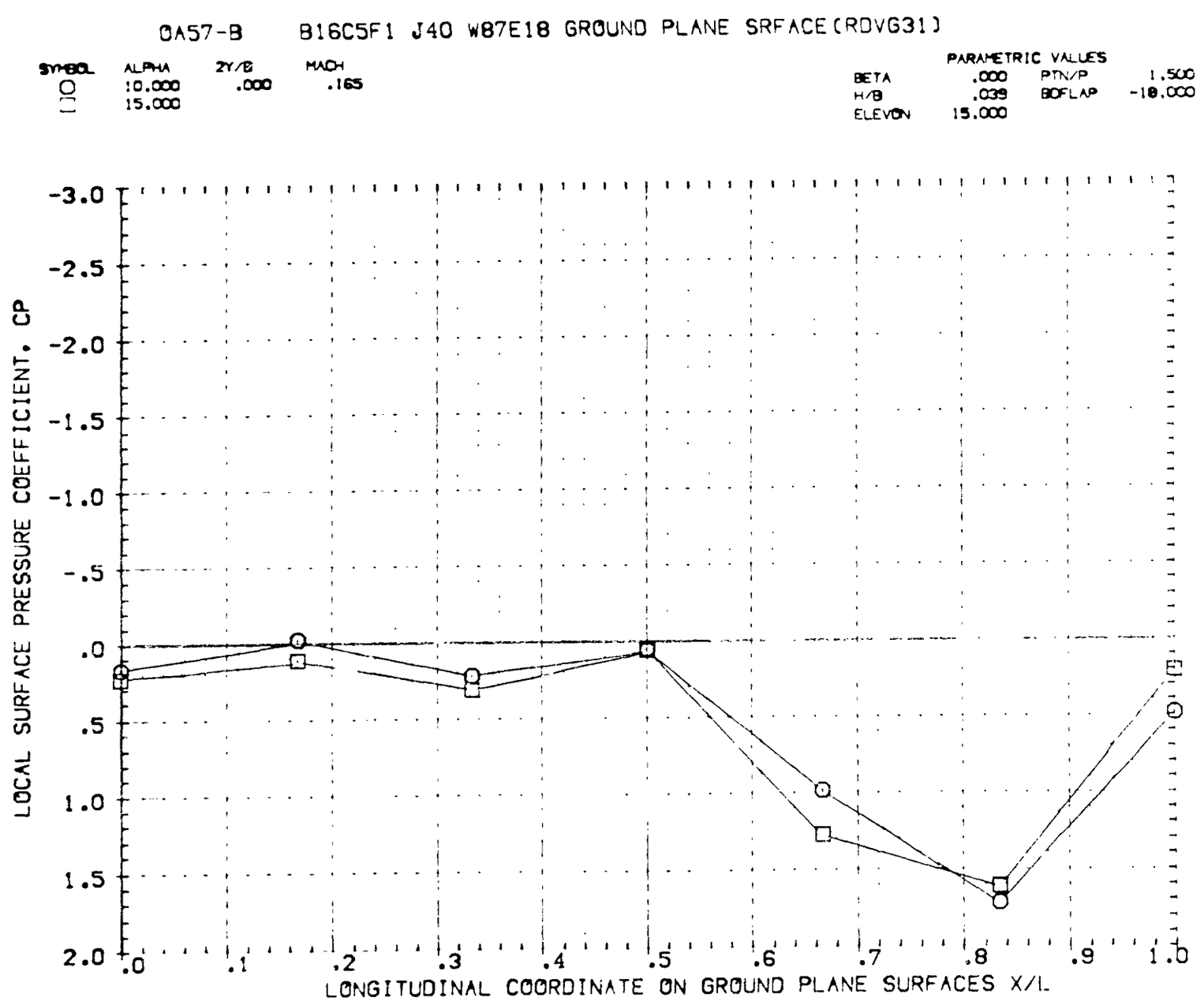


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

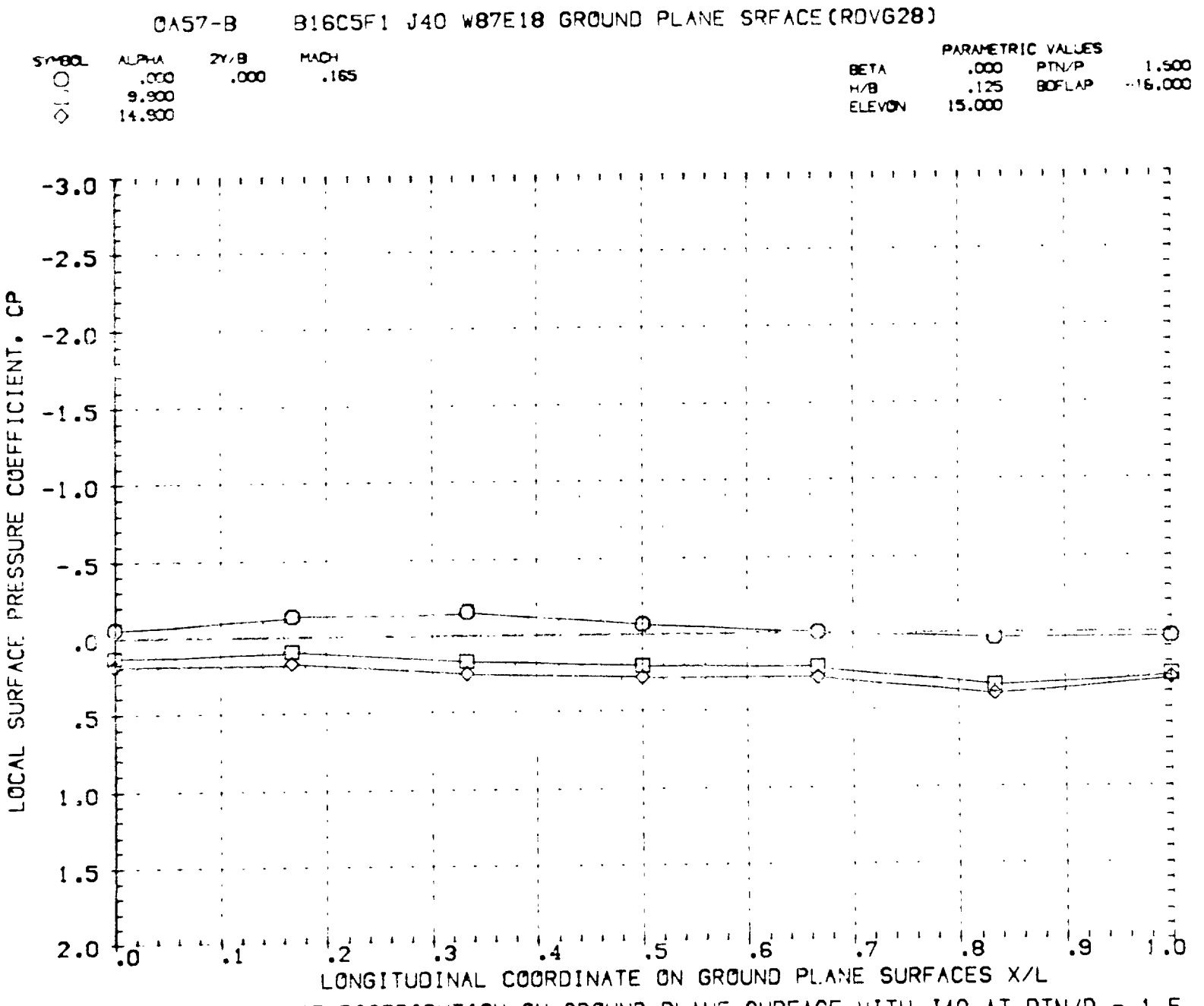


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

0A57-B B16C5F1 J40 W87E18 GROUND PLANE SRFACE(RDvG34)

SYMBOL	ALPHA	ZY/B	MACH
○	.000	.000	.165
□	9.900		
◇	14.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.500
H/B	.286	BOFLAP	-18.000
ELEVON	15.000		

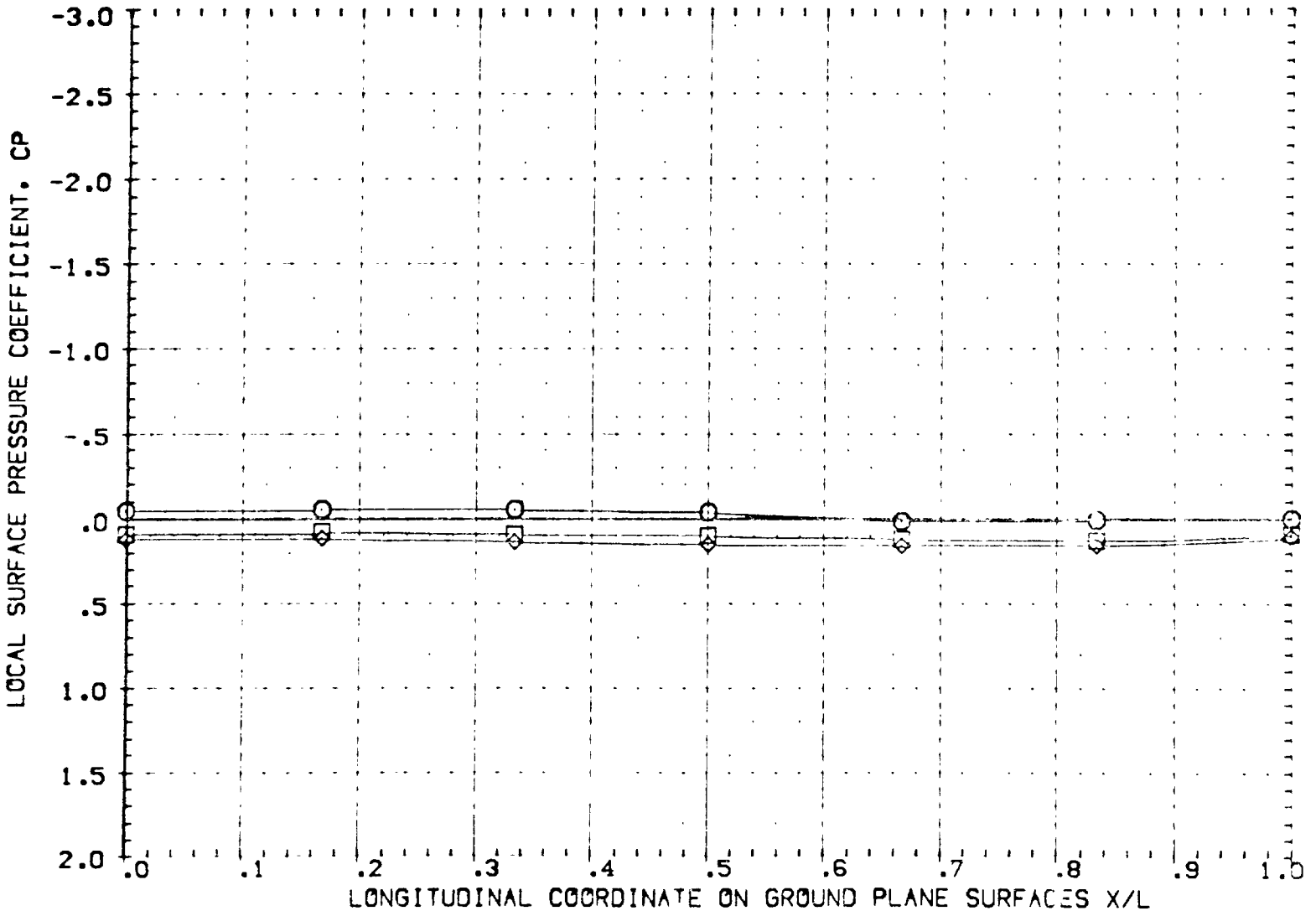


FIG 99 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J40 AT PTN/P = 1.5

0A57-8 B16C5F1 J41 W87E18 GROUND PLANE SRFACE(RDVG36)

SYMBOL	ALPHA	ZY.B	MACH
○	10.000	.000	.165

PARAMETRIC VALUES

BETA	.000	PTN.P	1.000
H/B	.039	[illegible]	-18.000
ELEVON	.000		

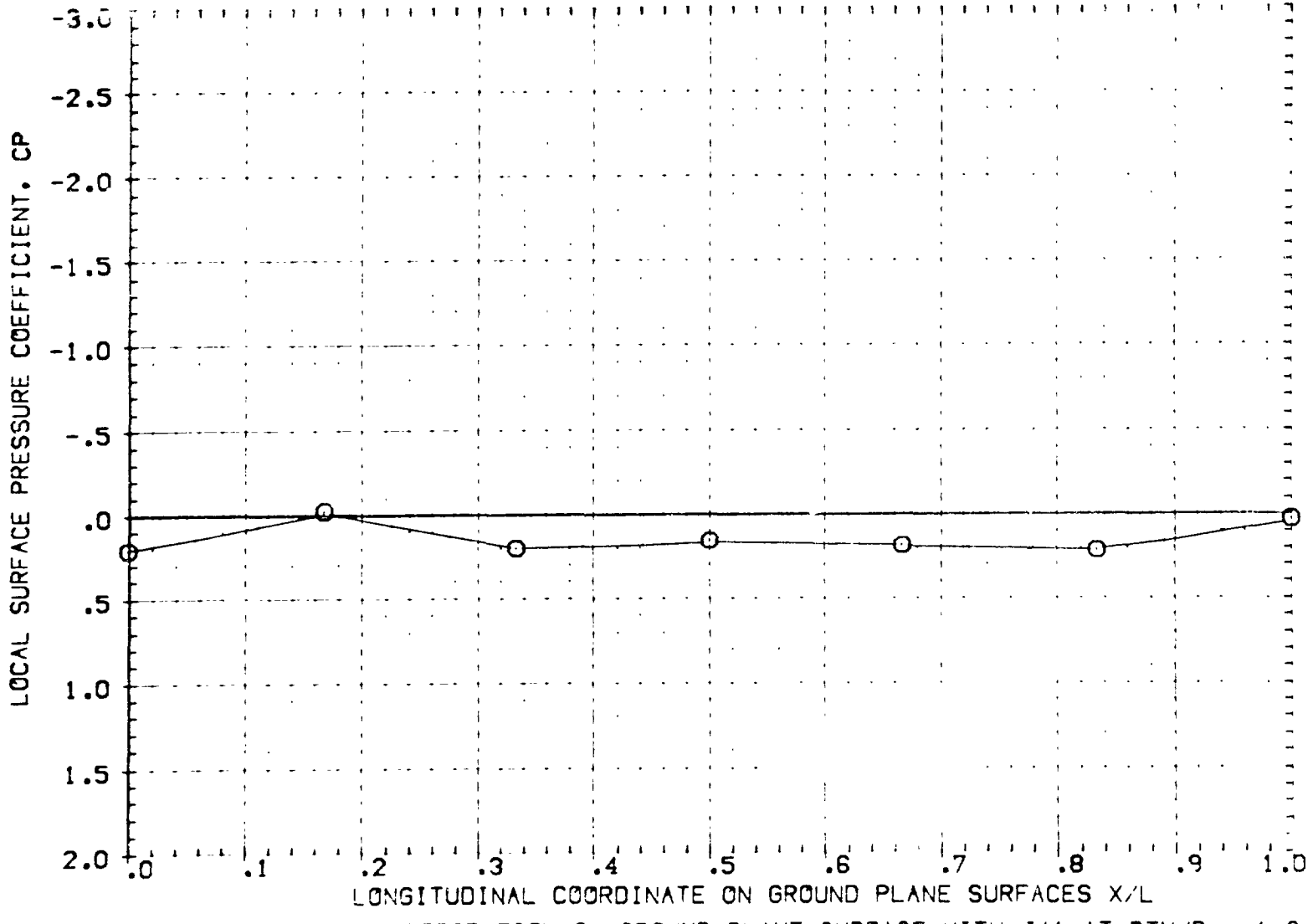


FIG 100 PRESSU[illegible] DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

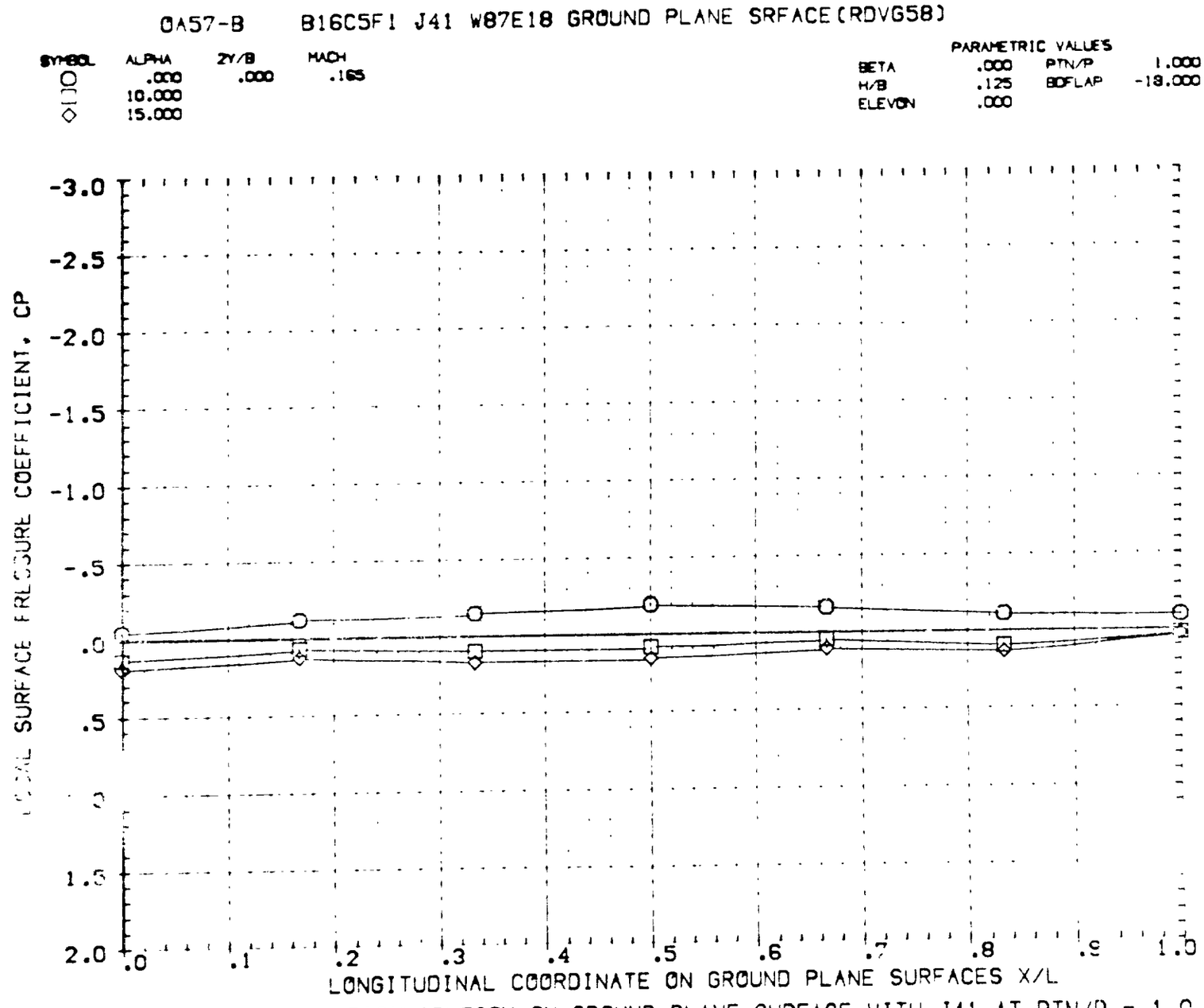


FIG 100 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

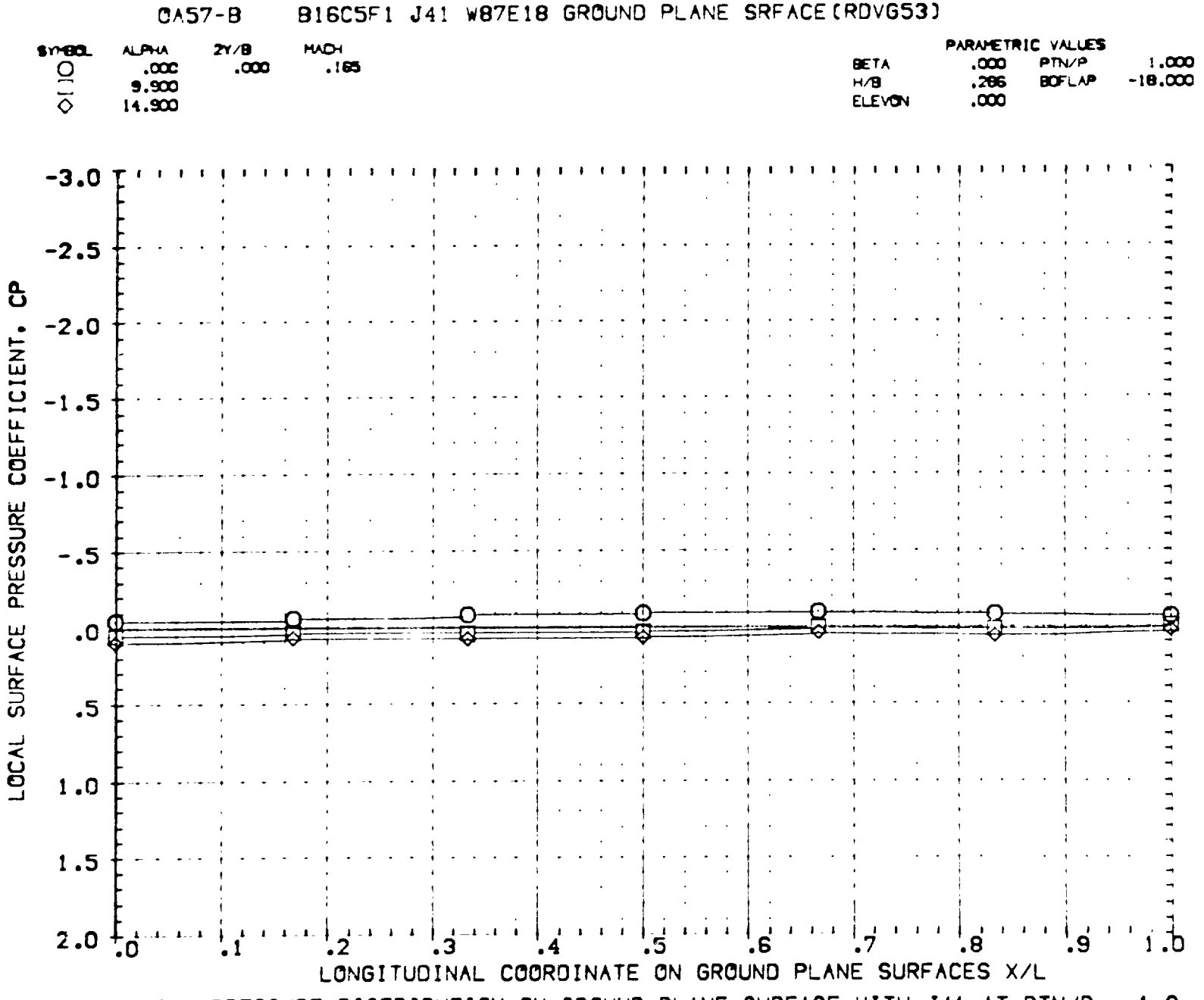


FIG 100 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

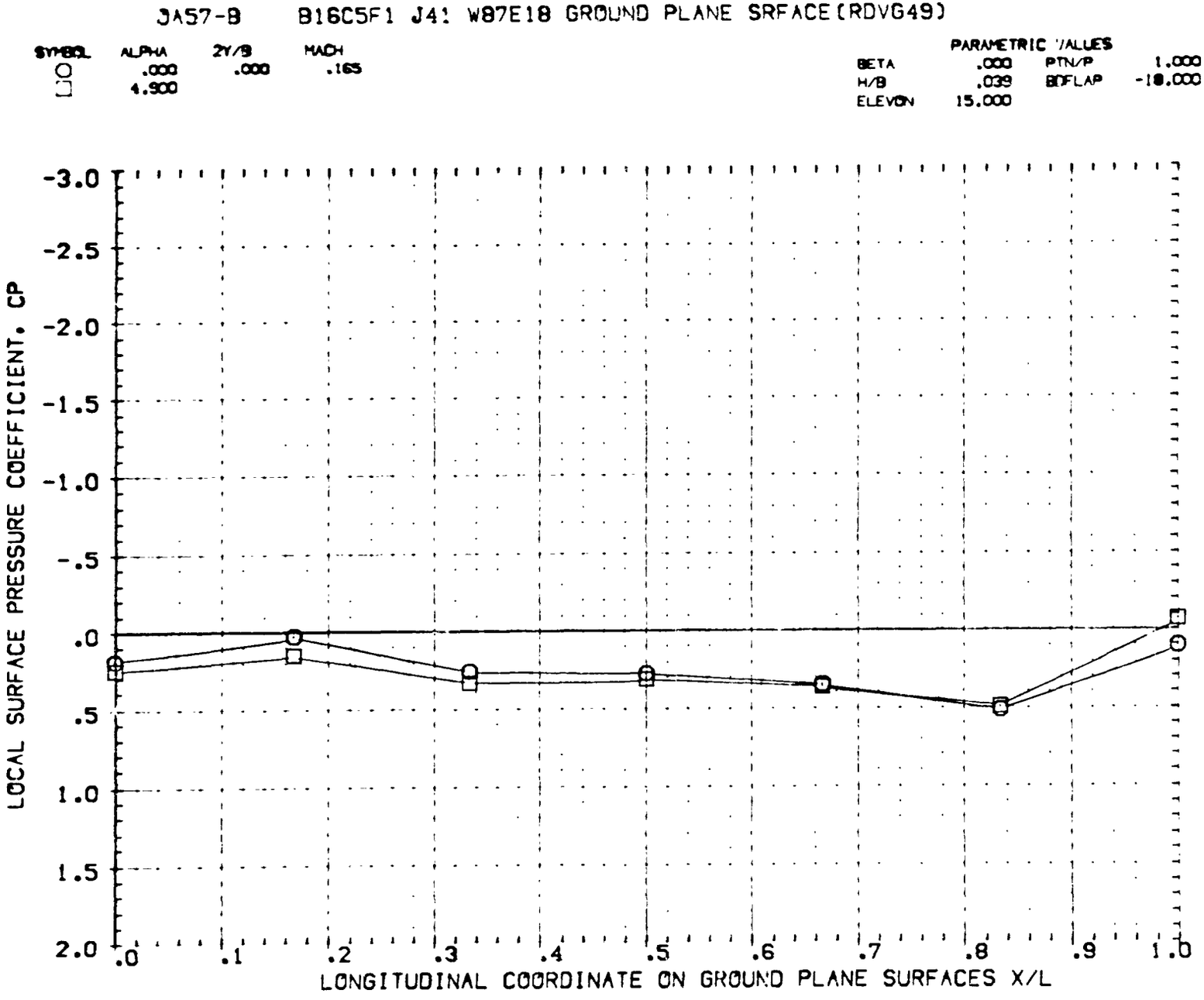


FIG 100 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

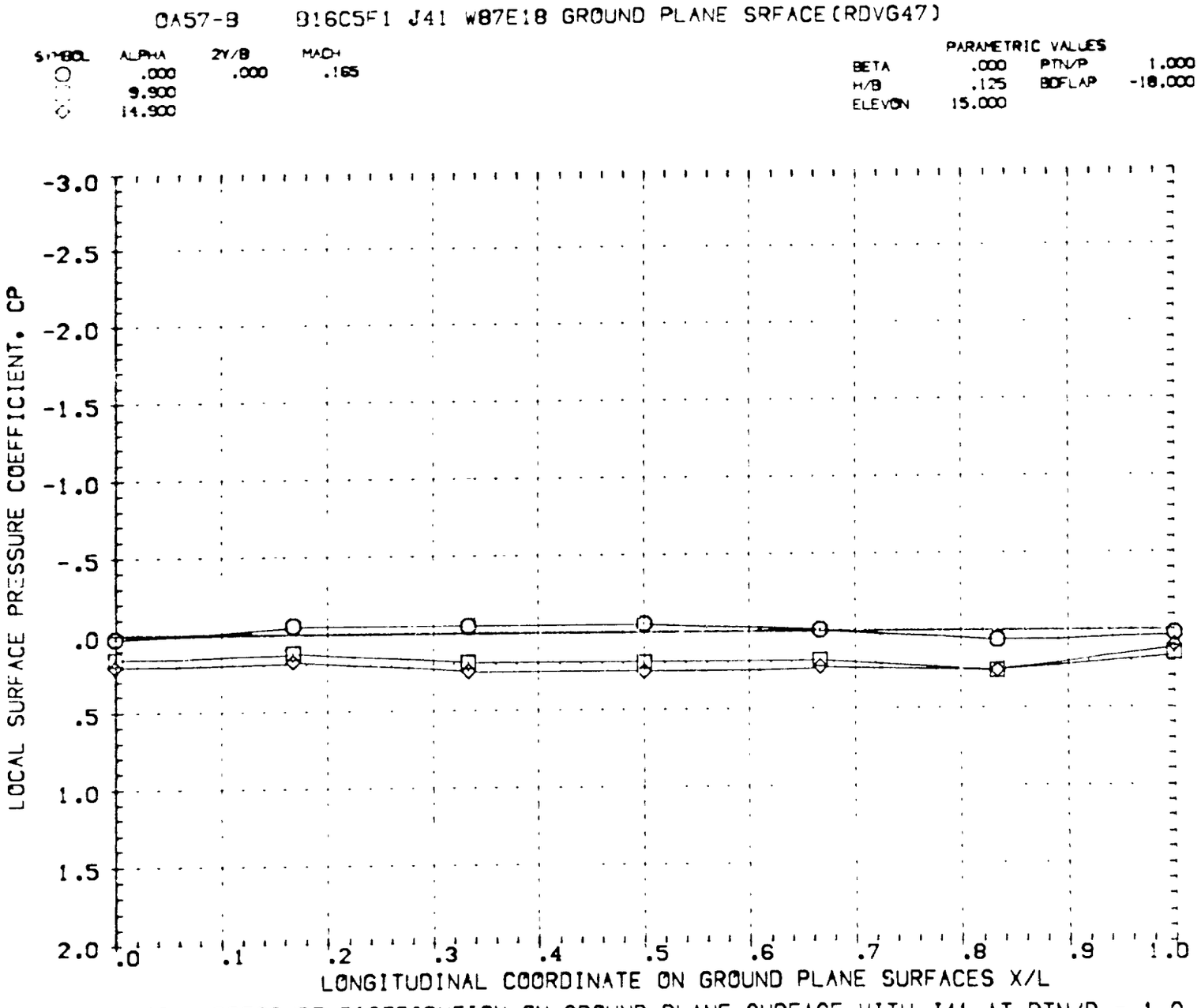


FIG 100 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

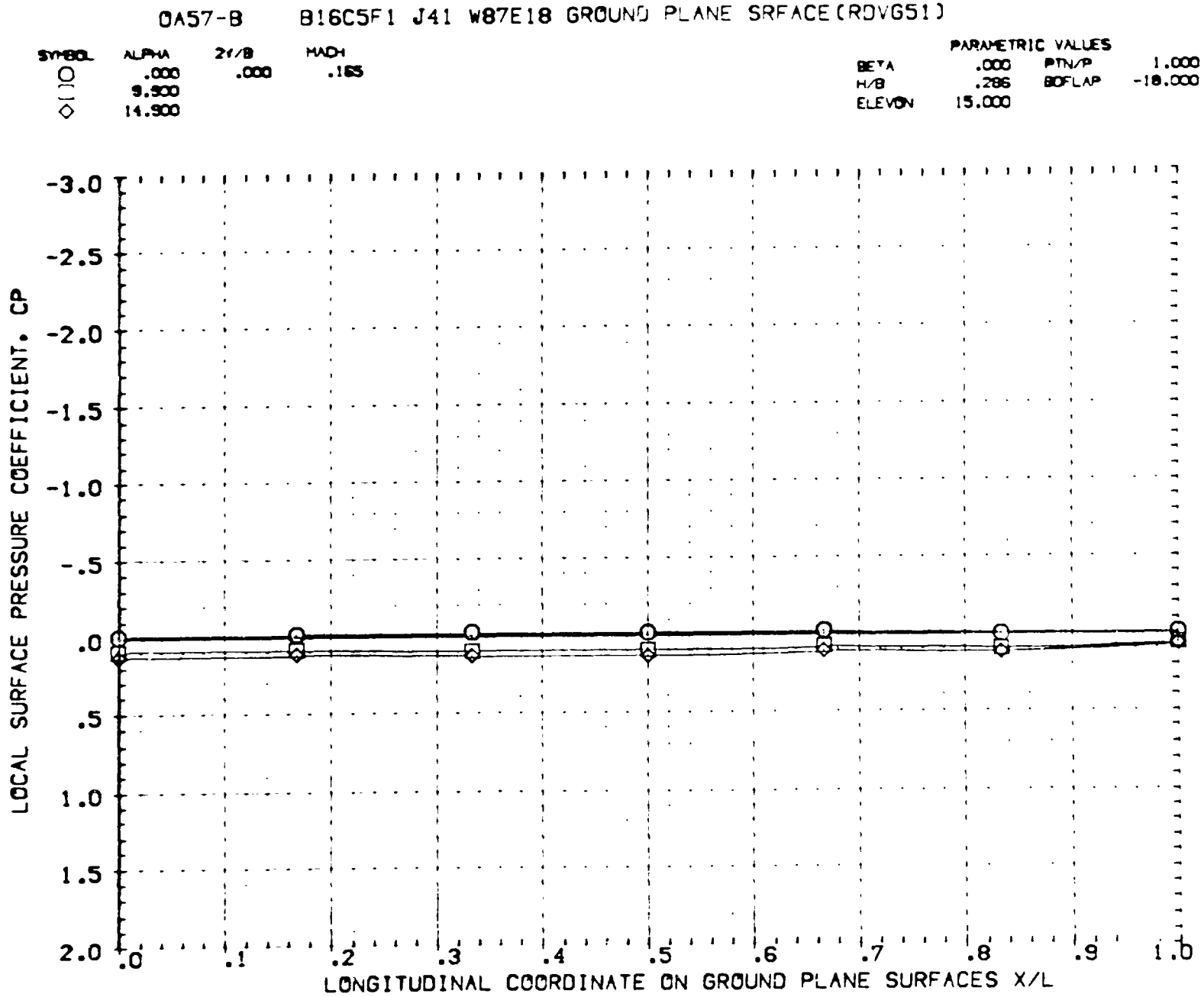


FIG 100 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.0

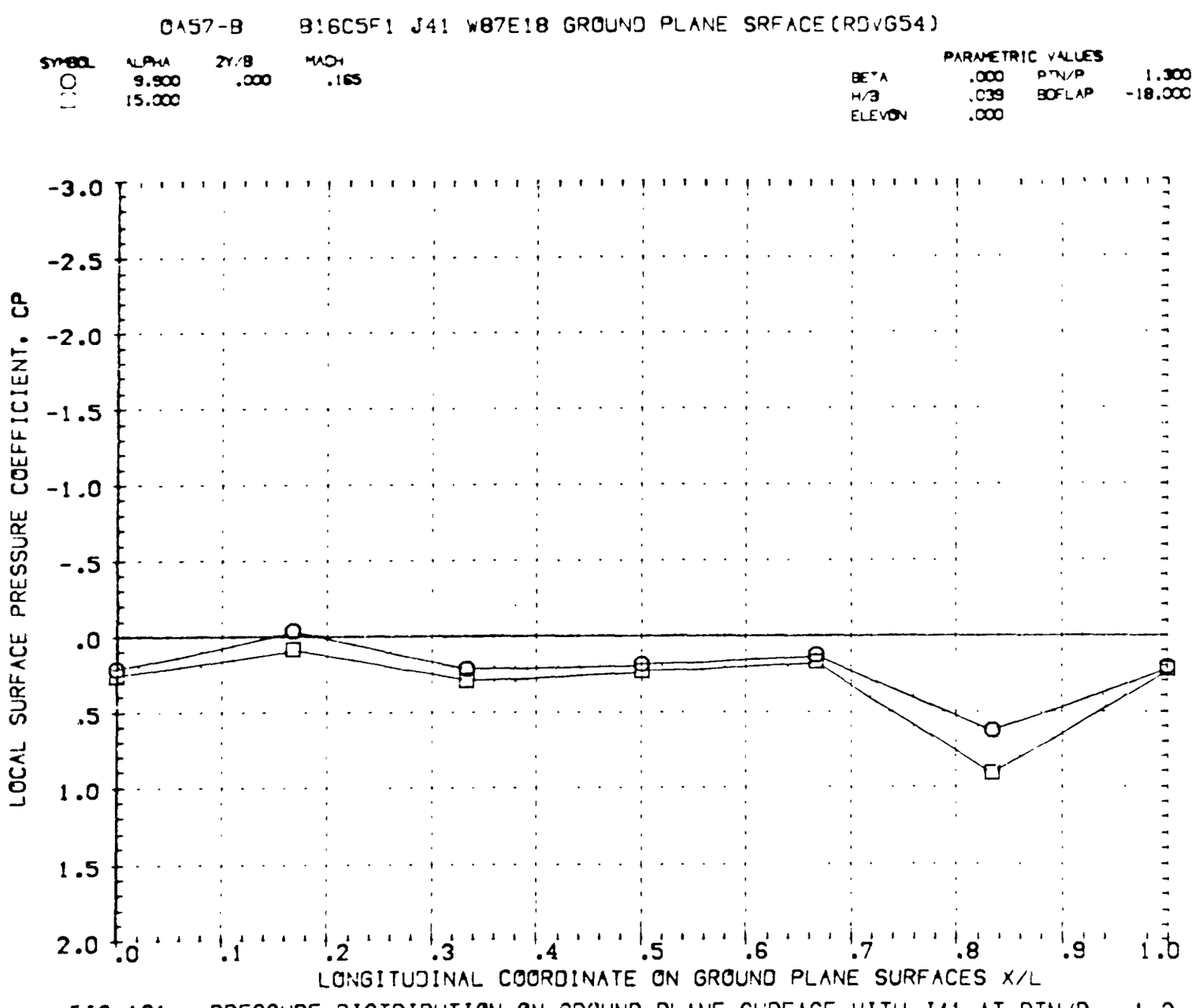


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

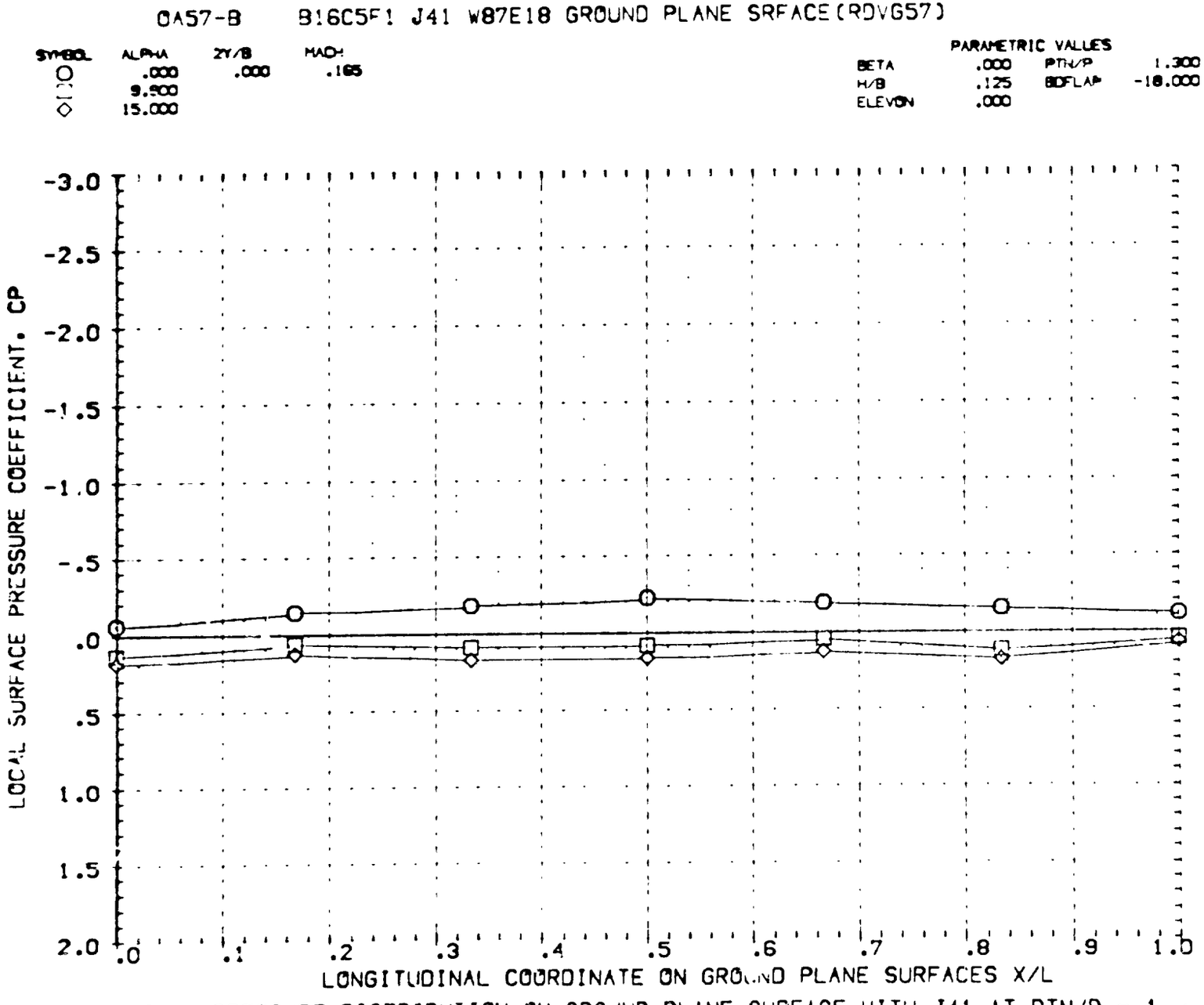


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

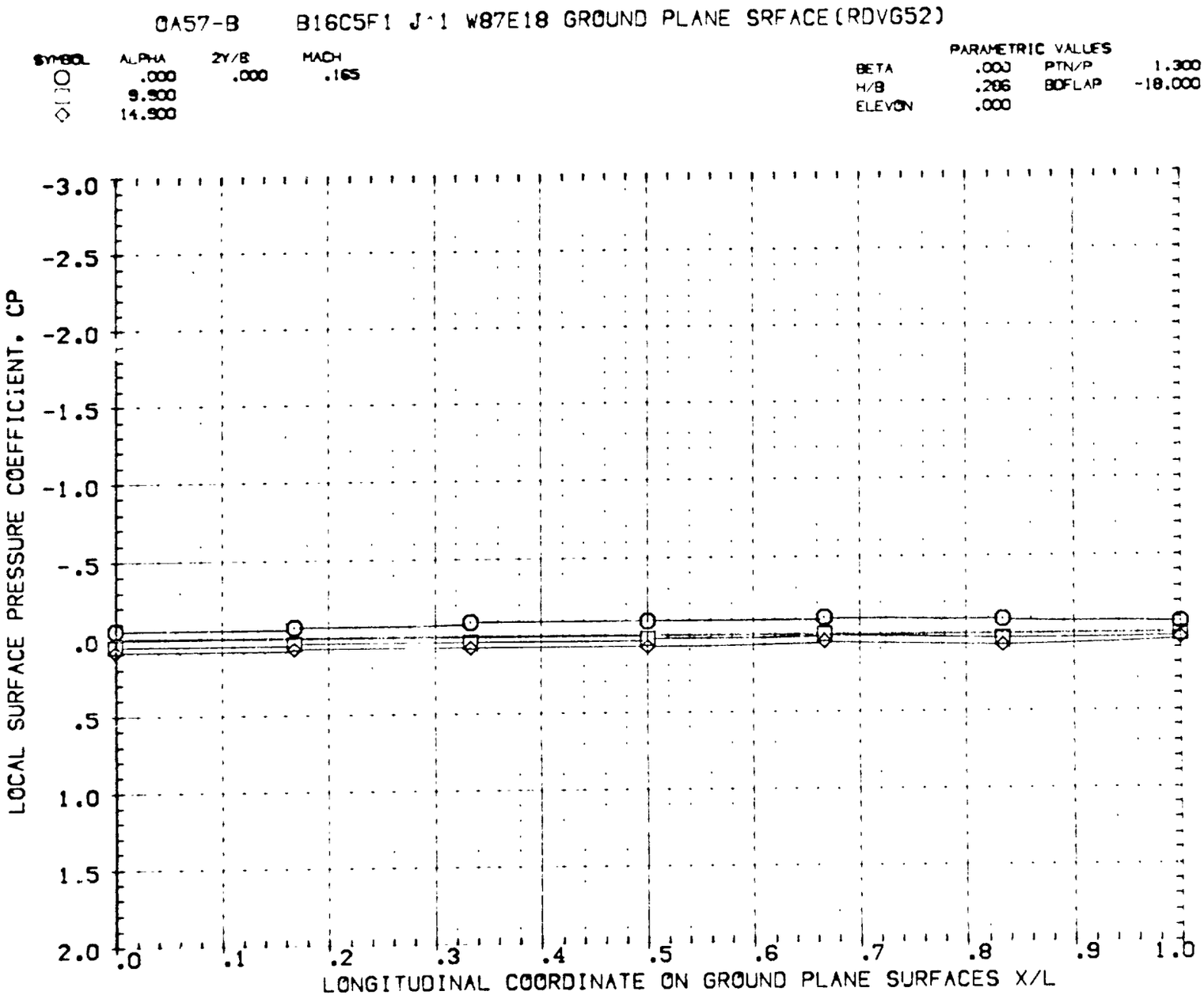


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

SYMBOL	ALPHA	2Y/B	MACH
○	.000	.000	.165
□	4.900		

PARAMETRIC VALUES

BETA	.000	PTN/P	1.300
H/B	.039	BOFLAP	-10.000
ELEVON	15.000		

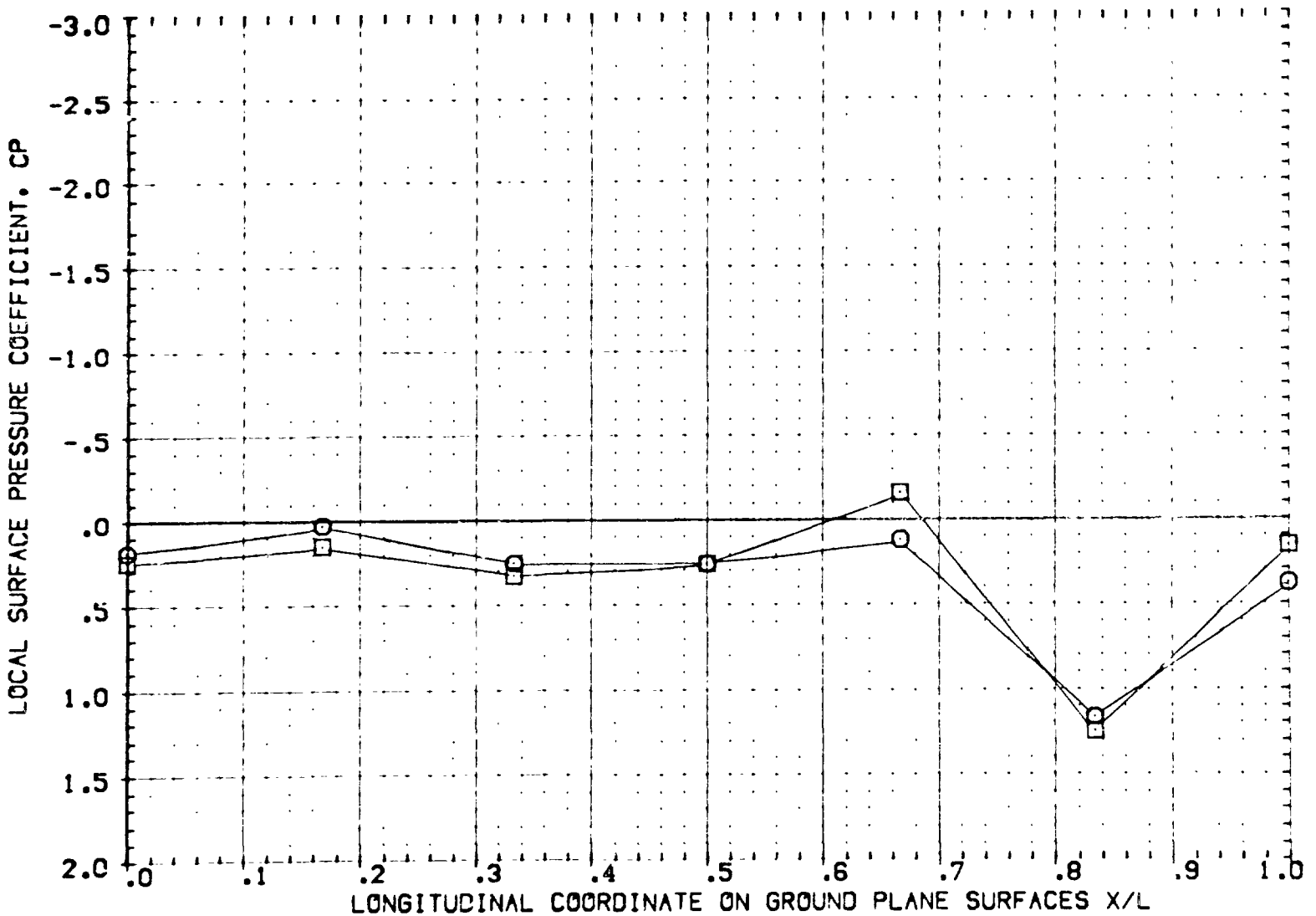


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

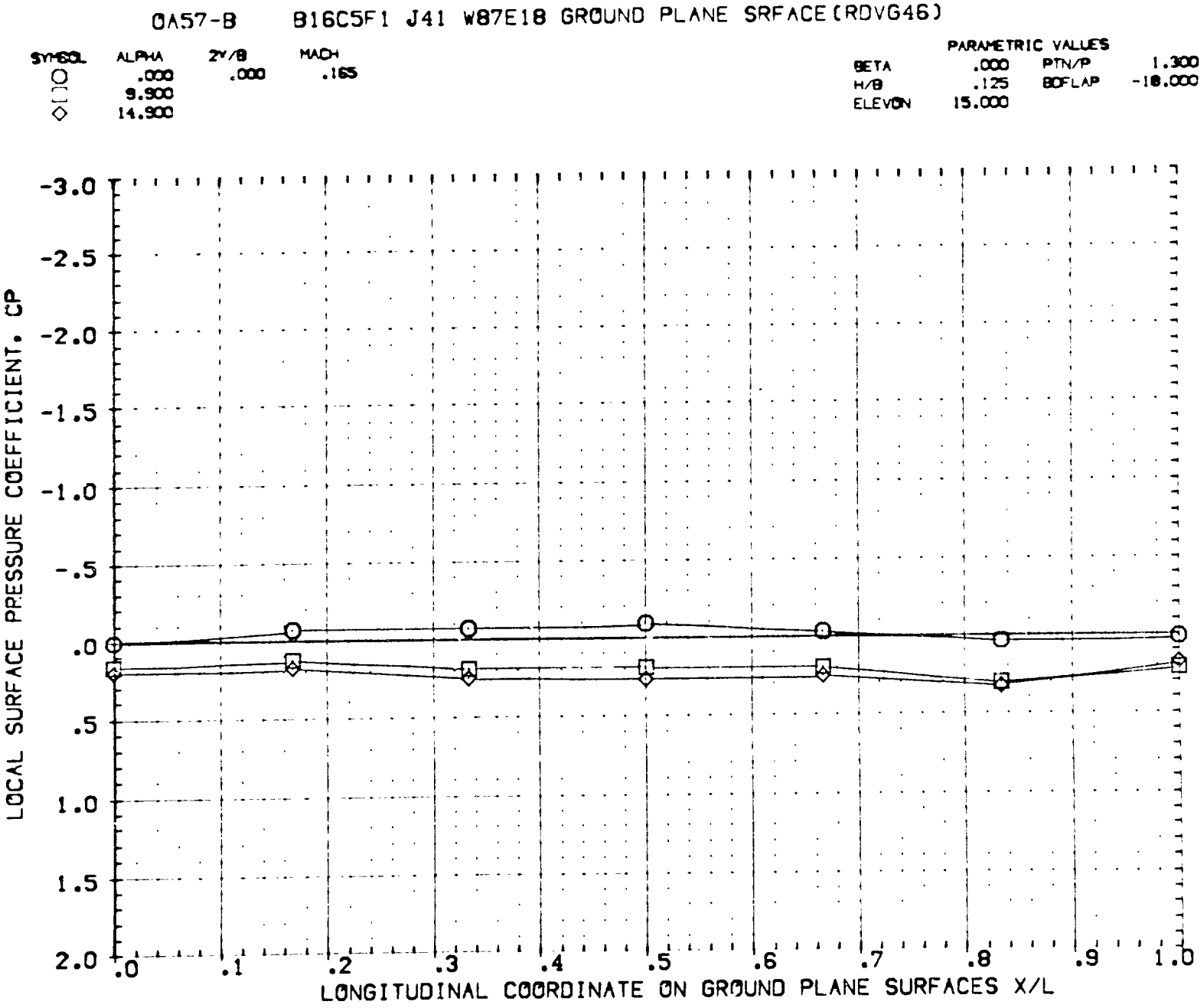


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

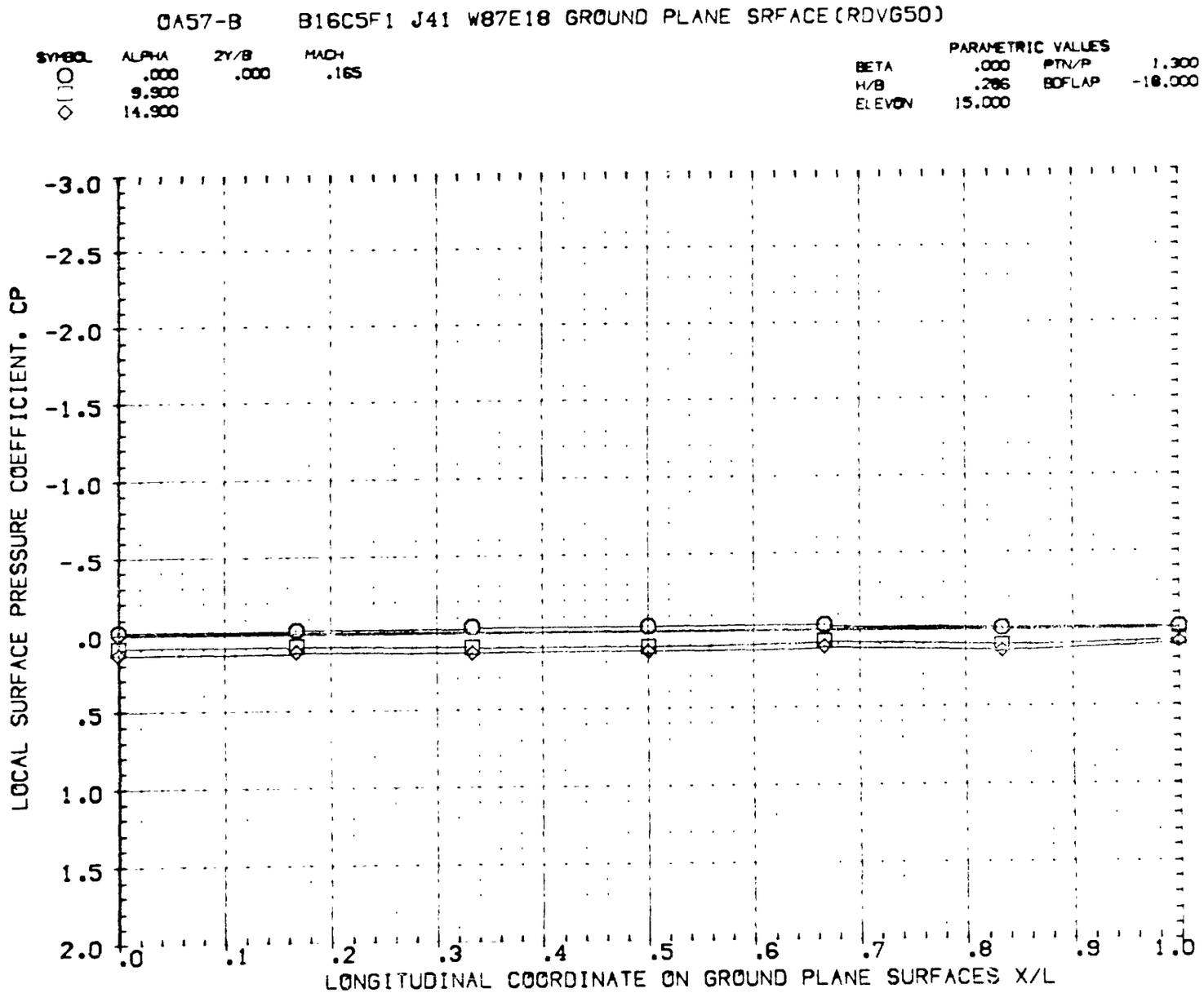


FIG 101 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J41 AT PTN/P = 1.3

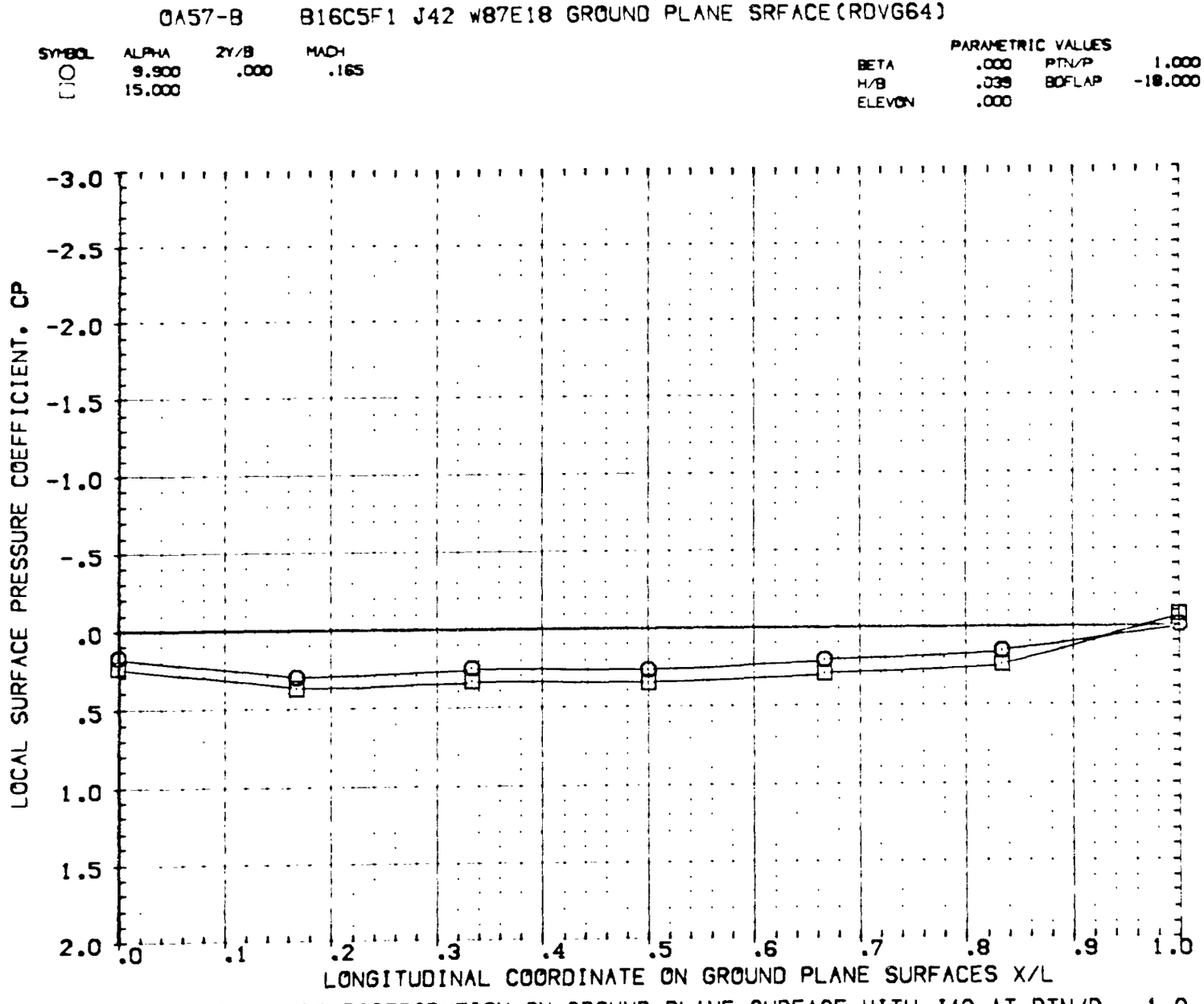


FIG 102 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.0

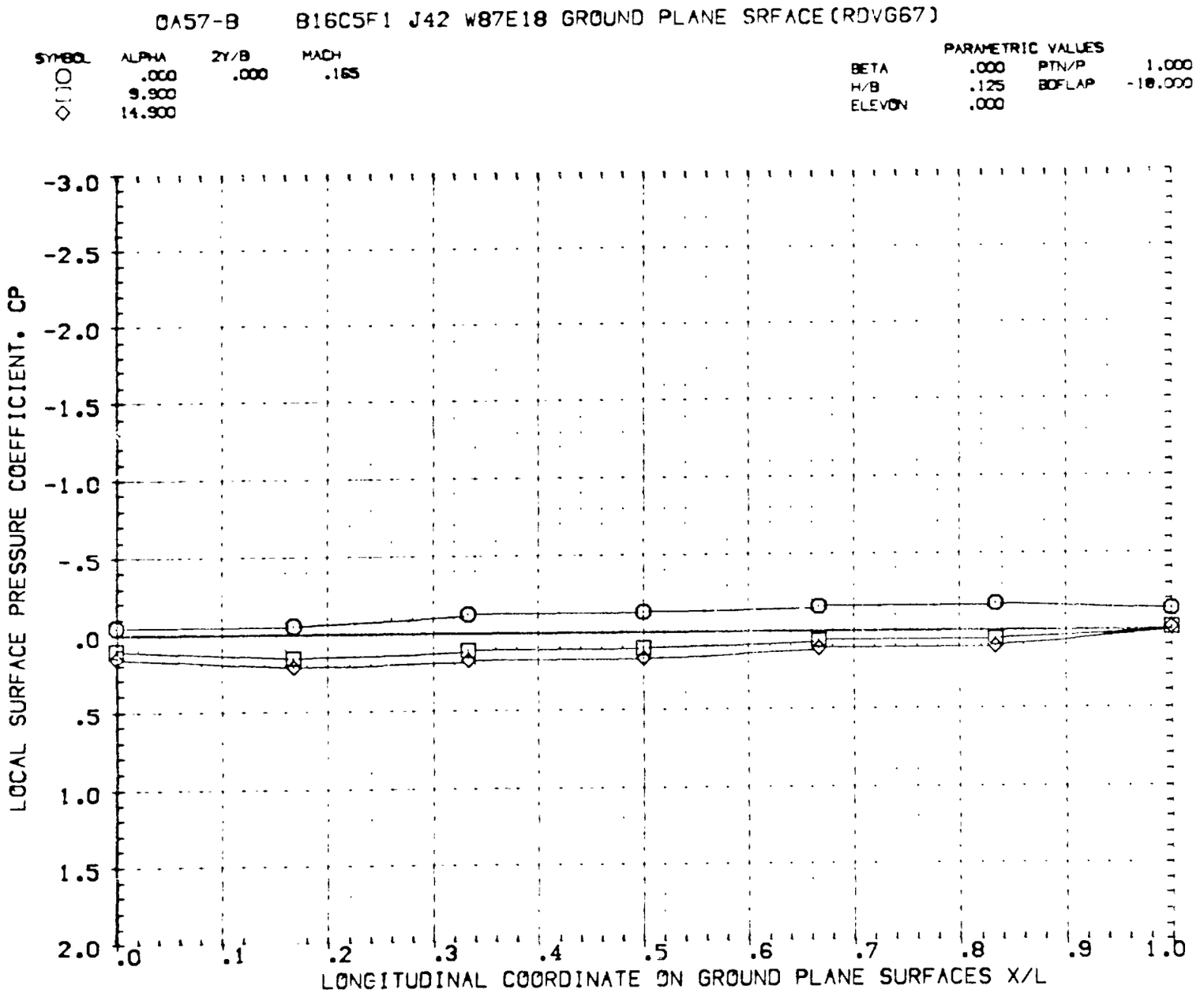


FIG 102 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.0

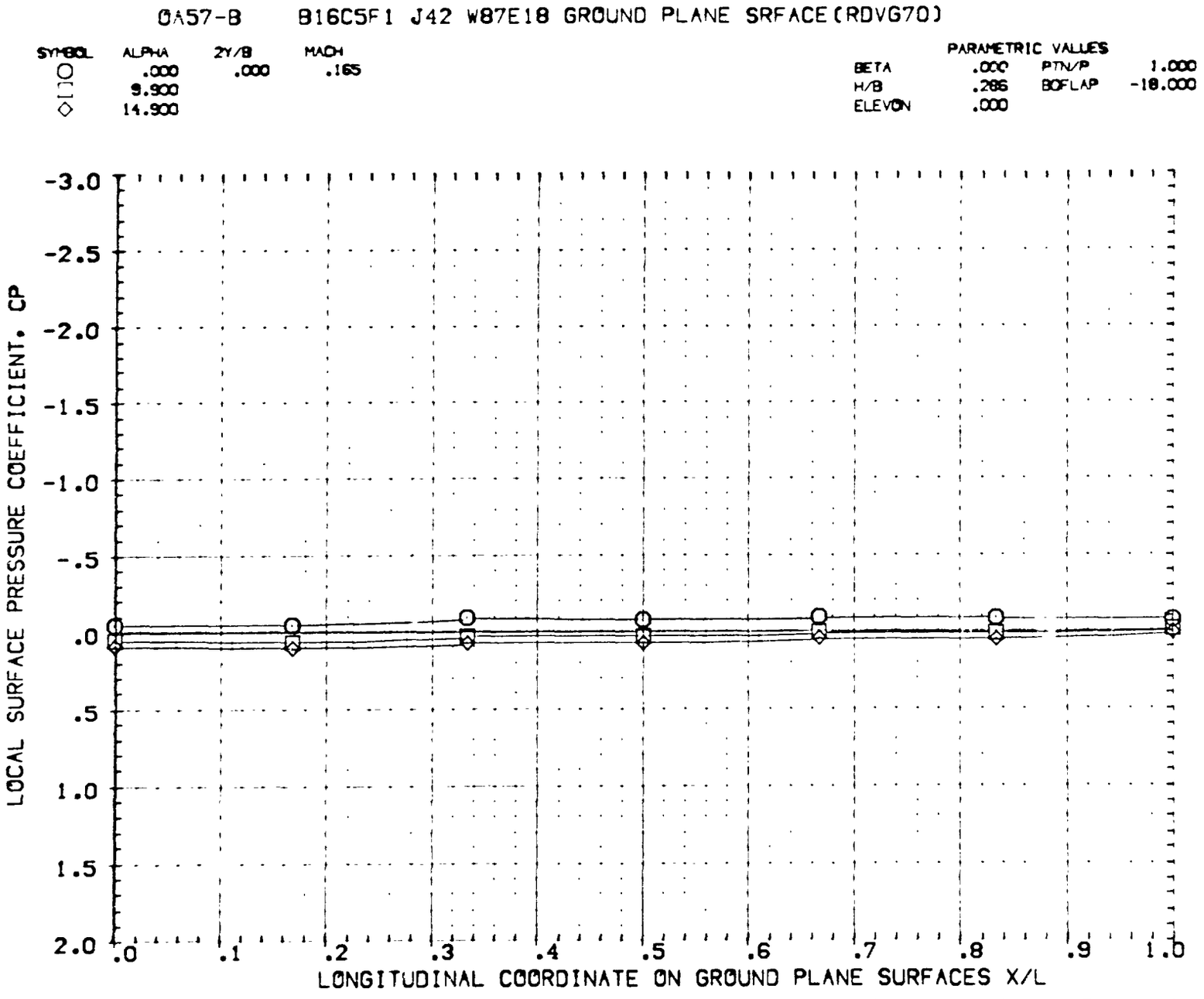


FIG 102 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.0

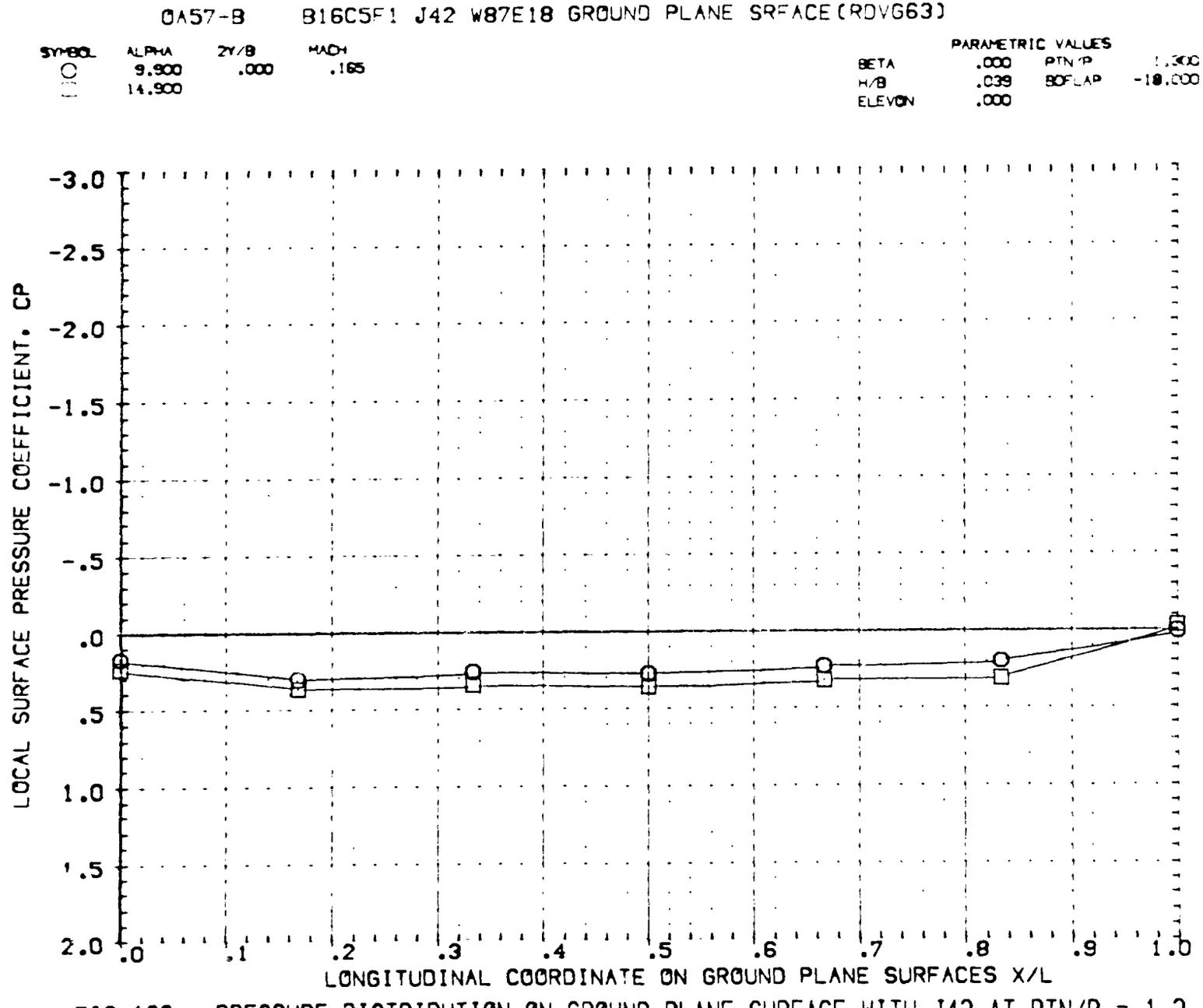


FIG 103 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.3

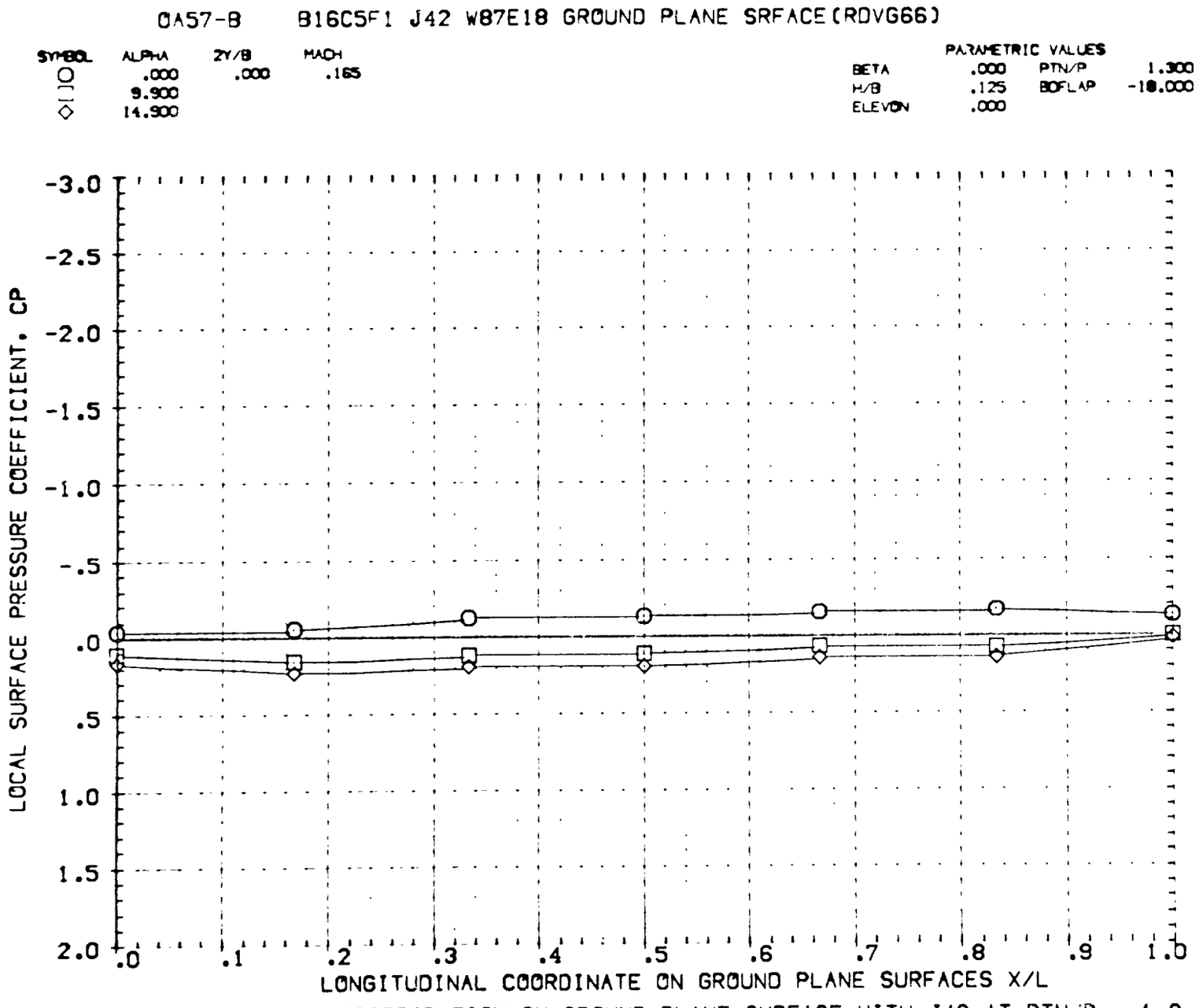


FIG 103 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.3

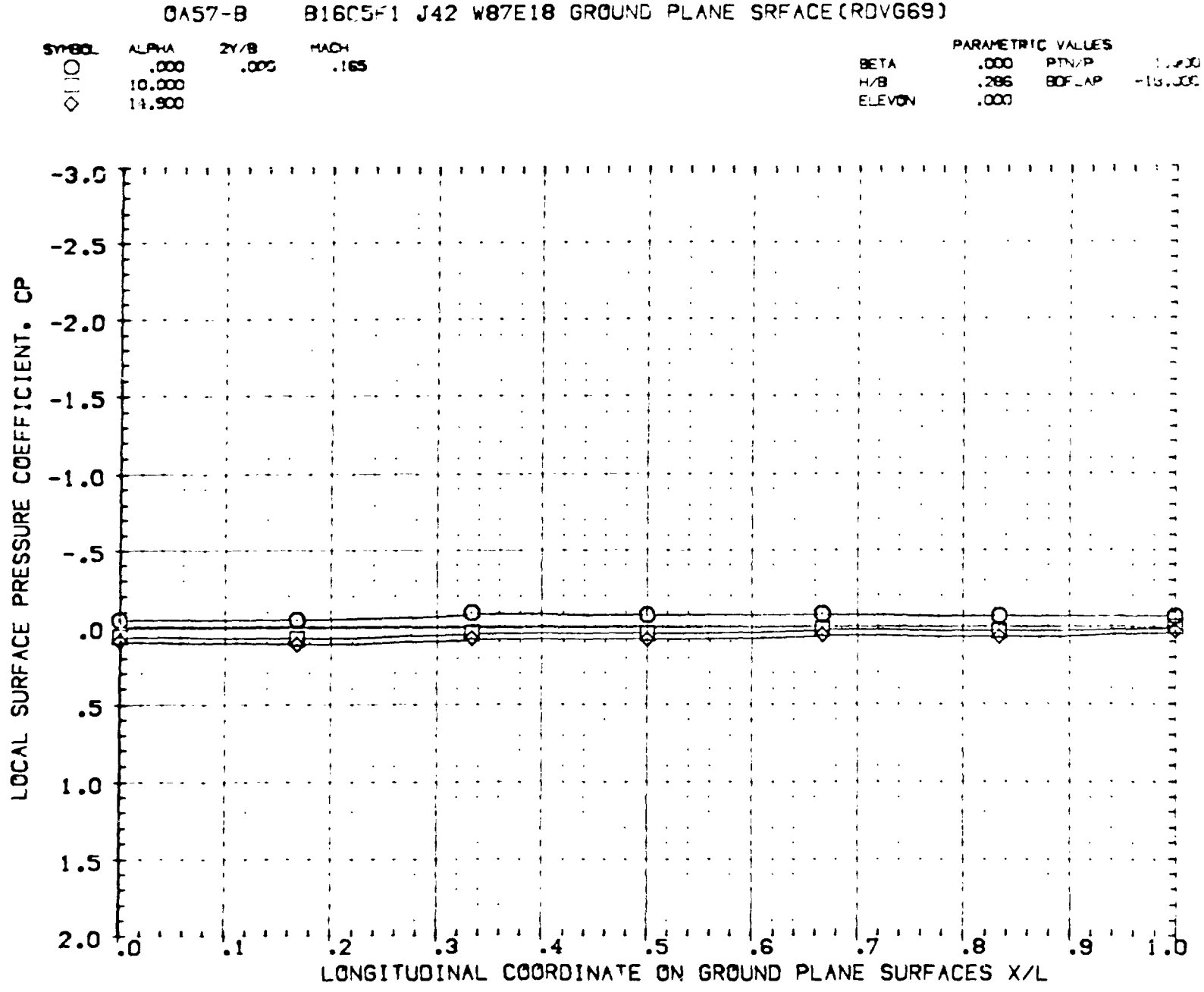


FIG 103 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.3

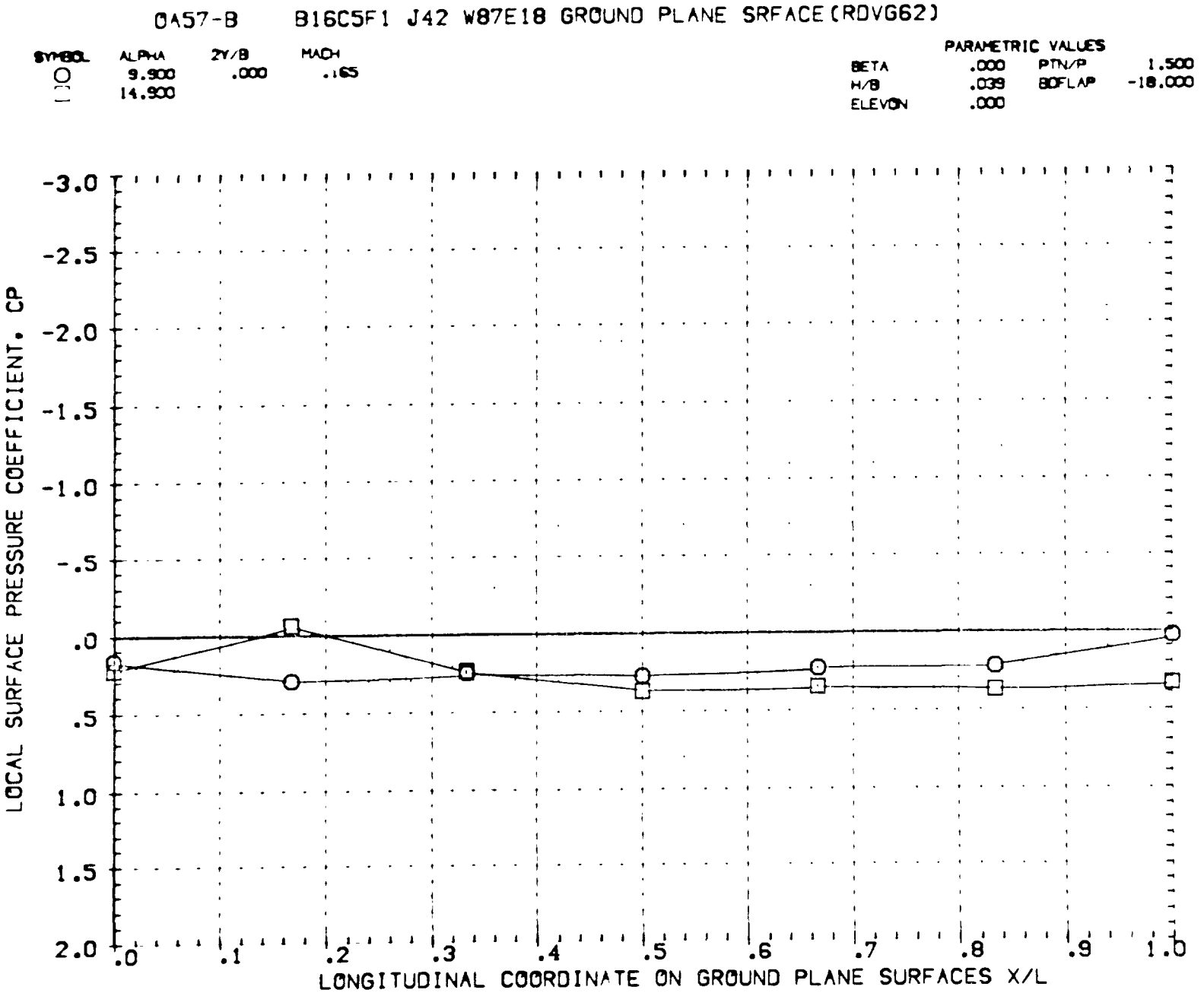


FIG 104 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.5

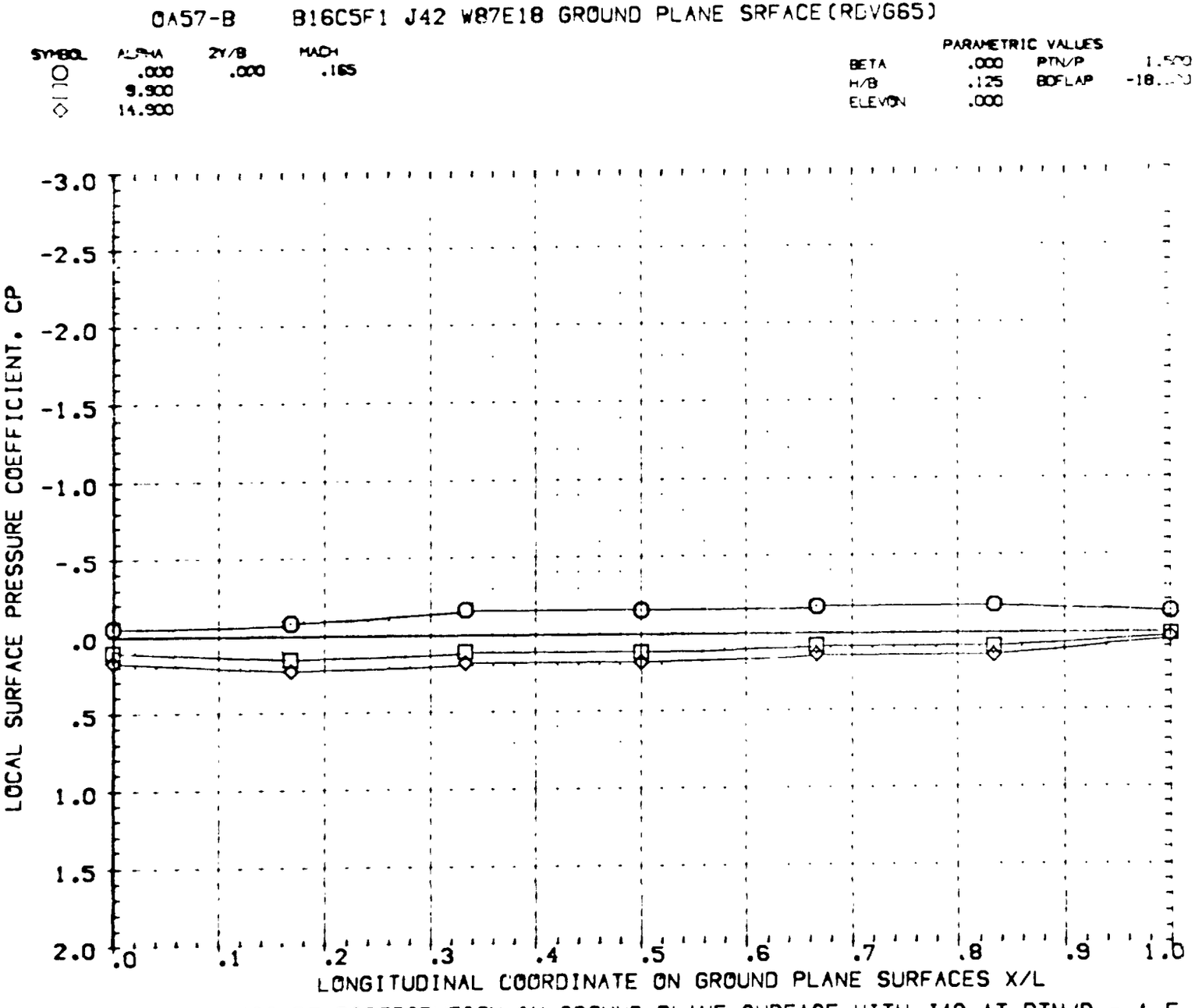


FIG 104 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.5

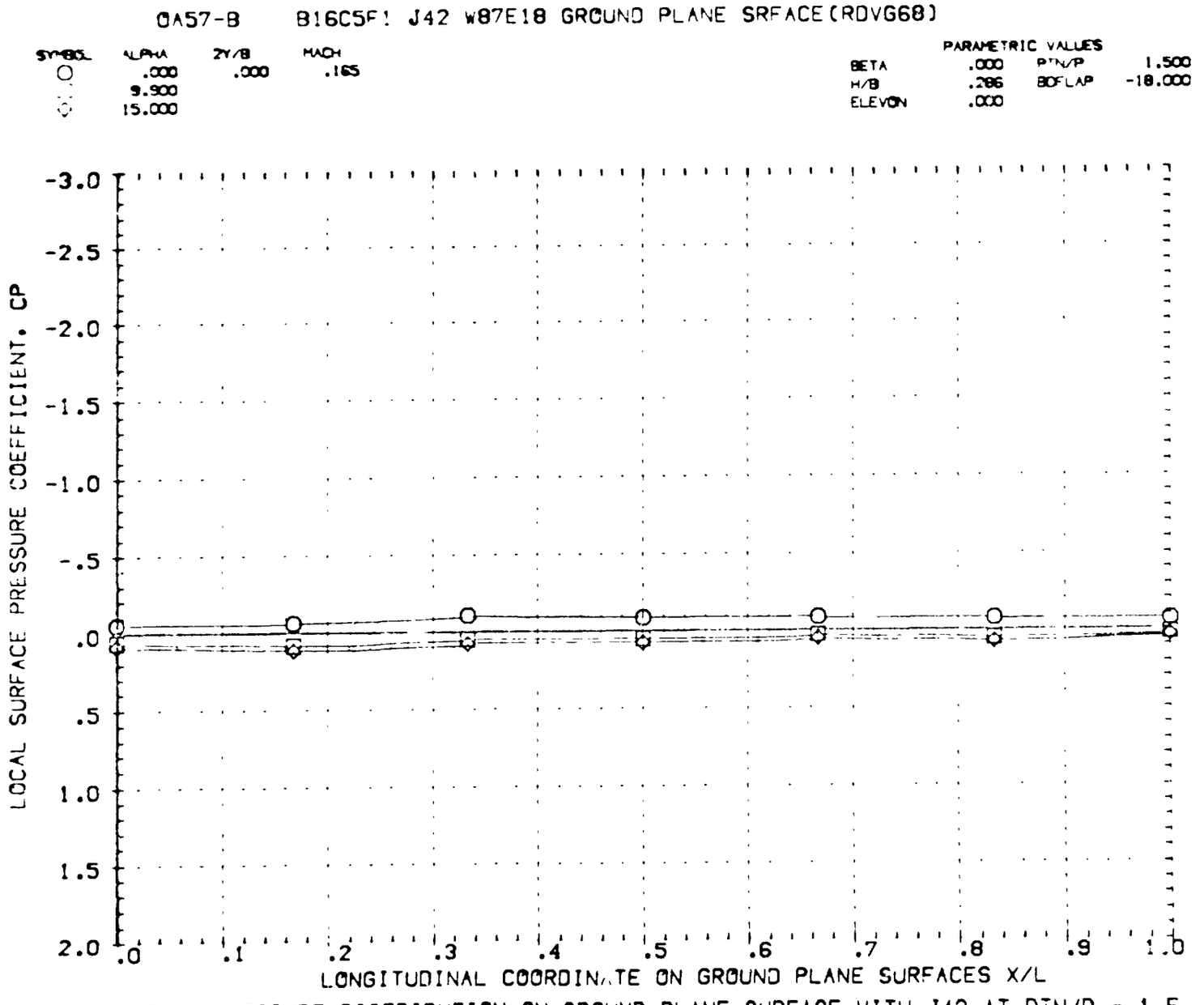


FIG 104 PRESSURE DISTRIBUTION ON GROUND PLANE SURFACE WITH J42 AT PTN/P = 1.5